EVOLUTION OF UNITED STATES TELECOMMUNICATIONS

POLICY, TECHNOLOGY, AND COMPETITION AT THE BELL OPERATING COMPANIES 1952-1996

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To my wife: Diane

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My wife encouraged me and her belief that I could achieve success kept me going forward. Without her continuing support, I could never have completed the requirements. My daughter earned her Ph.D. and made me so proud that for the first time there was a Dr. Drews. Then she got married. After a career in technology-based companies, the thought was not in my mind that when I left the business world I could be her replacement as a Dr. Drews. I was honored to be accepted into the Georgia Tech History of Technology graduate program with the intention of seeking a Master's degree and possibly teaching at the college level. My first contact was with John Krige. He suggested that I enroll as a Ph.D. student to give me the latitude to continue after a Master's degree if I should desire. I greatly appreciate that excellent suggestion. Though I doubted I ever could finish it at my advanced age. My daughter has continued to inspire me. She and my wife both believed I could do this, even when I doubted it. Their faith and support, along with all the other members of my family, is the reason for my success.

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DEFINITIONS[1]

Basic Exchange Service: Service within a local calling area provided to customers by the incumbent telephone company which allows them to make calls for a monthly charge.

BOC: A Bell Operating Company was owned by the parent company, AT&T, which provided local and long distance services within a specific region of the country. Calls between regions and internationally where provided by another wholly owned company, AT&T Long Lines.

Certification: Inspection of proposed non-Bell terminal equipment by an expert agency which determines if it can be connected to the network without creating harms.

Channel: An electronic path over which communications signals in the form of voice or data are transmitted.

Common Carrier Principle: The position that regulation should limit the number of businesses which provide certain essential public services (such as utilities and transportation) in each geographic area. The contention is this will achieve low-cost, high-quality service through regulatory oversight using standards of accountability for prices, profits, and service. It argues this approach is preferable to multiple competing firms and will result in greater utilization of capacity and therefore lower unit costs.

[1] Some definitions are paraphrased from sources in the 1970 to 1985 years with the intent of reflecting commonly used terminology of that period. They are modified by the author to present a clearer and more balanced perspective.

Connecting Arrangements: Interface equipment provided by the regulated telephone company to be installed between customer-provided terminal equipment and telephone network facilities. The goal was to insure against damaging signals and voltage emanating from terminals which could interfere with the service to other customers or possibly create hazards for customers or company technicians.

Cost Averaging: The policy of the BOCs before competitors entered the market. It provided for all products and services in all geographic areas to be equally priced as the means used to establish universal service. The goal was to permit all users to have access to all services at prices they could afford even when the cost to provide a specific service to a specific customer was greater than the price. It also meant that some products and service were priced above the cost and this became the target area for new competitors.

CPE: This acronym has been used in two ways. Initially, it meant Customer Premises Equipment, but later it also was used to mean Customer Provided Equipment.

End-to-End responsibility: The traditionally held belief within telephone companies that the only way to ensure quality service is for them to provide and maintain all aspects, which included CPE.

Hard-wired: Direct connection of CPE to telephone company network rather than through inductive or acoustic coupling.

Independents: Local telephone operating companies that were not part of the AT&T Bell System.

ICT: Information and Communications Technologies is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications.

Interconnection: A generic term for linking equipment or systems with the principle telephone network. In this dissertation, the term will primarily refer to the connection of premises equipment to the access lines of the local telephone network.

Local loops: Communications facilities that connect a customer's premises to a carrier's switching center or hub site.

LRMC: The minimum increase in total cost associated with an increase of one unit of output when all inputs are variable. The long-run marginal cost curve is shaped by returns to scale, a long-run concept, rather than the law of diminishing marginal returns, which is a short-run concept. The telephone companies historically used this accounting method. Depreciation rates for capital investment, such as cables and switches, were typically thirty years.

MTS: Message telecommunications service refers to services made available to customers over the nationwide switched network rather than private line services which are furnished to a single customer for their exclusive use.

NARUC: The National Association of Regulatory Utility Commissions represents Public Service Commissioners who regulate essential utility service in each state with the charge to assure reliable utility service at fair, just and reasonable rates.

OTP: The White House Office of Telecommunications Policy (OTP) was established in 1970. In 1978, it was merged, along with the Department of Commerce's Office of Telecommunications (OT), into the newly created National Telecommunications and Information Administration (NTIA). Before this reorganization, OTP was the principal federal agency involved in issues relating to the impact of increased telecommunications and computerization on personal privacy. OT's primary function was to provide OTP with scientific and engineering support for managing radio frequencies used by federal agencies.

PBX: A Private Branch Exchange is a switching system that provides internal communications between a customer's phones and from those phones to the nationwide network. Most PBXs were located on a customer's premises although local telephone companies also began to provide Centrex services which were similar in functionality but were located on the telephone company's premises.

RBOC: One of the seven Regional Bell Operating Companies created with the implementation of divestiture on January 1, 1984. All seven were holding companies for a combination of the pre-divestiture BOCs.

USITA/USTA: The United States Independent Telephone Association was a trade organization representing monopoly telephone companies which were not part of the Bell System. After the breakup of AT&T, the name was changed to the United States Telecom Association and became open to all providers of telecom services and equipment.

Vertical services: Equipment, accessories, or services provided by the telephone company to the customer, other than basic local service. This included extension phones, color sets, data sets, special bells or lights, and voice recording devices.

SUMMARY

This dissertation is focused on impacts of technology innovation and governmental policies on the telecommunications industry from the 1950s until the passage of the Telecommunications Act of 1996. Special attention is given to the local Bell Operating Companies (BOCs) and to the changes initially driven by competition in Customer Premises Equipment (CPE). Ultimately, it was the federal court's decision in January 1982, resulting in AT&T's divestiture of the BOCs, which permanently changed the entire landscape. However, this study begins well before 1982 to consider the magnitude of the BOCs' tradition of control over all aspects of telephone service and the significance of losing that control.

The terminal, subscriber loop, central office switches, and interoffice trunks had for many years been the exclusive province of the regulated telephone operating company. Communications lines and terminals were indivisible and installation of any subscriber-owned equipment violated the federal and state tariffs and carried with it the penalty of service disconnection. The demise of that tradition occurred because of technology evolution, initiatives of competitors, changes in customer requirements, BOC responses, and ultimately the actions of governmental bodies. To fully appreciate impacts of the court-ordered divestiture and the ramifications of various adjustments necessary by the BOCs, mandated that this study extends into the years of the mid-nineties.

CHAPTER 1. INTRODUCTION

Certain dates in modern United States history stand out in the minds of Americans. December 7, 1941, November 22, 1963, and September 11, 2001, are clearly notable for how they changed the country. January 8, 1982, is certainly below those dates in its level of impact, but still very significant to the telecommunications industry at that time. Many managers had been brought to the AT&T headquarters in New Jersey from the Bell Operating Companies (BOCs) to help in preparation of the defense against the Department of Justice (DOJ) antitrust case. These managers and their AT&T counterparts took it very seriously and yet were certain of a favorable outcome. How could it be otherwise? The AT&T companies had a million employees and three million shareholders. They dominated all aspects of the telecommunications industry.

In general, customers of the BOCs considered their level of service to be good. AT&T's extensive media campaign in 1980 aimed to further reinforce this positive image. The goal was to convince the public that it was essential to keep in place the Bell System which brought together "23 Partners." This referred to the BOCs, Western Electric as a supplier, Bell Labs for research and development, and Long Lines for long-distance service. The tagline used was "The System is the Solution."

On the Friday morning of January 8, 1982, the managers at AT&T General Headquarters in New Jersey and in New York City were called together over closed circuit television to watch an announcement by Chairman Charlie Brown about the DOJ antitrust case. A direct communication by the Chairman to employees was a new experience. Those huddled in front of the screens in every hallway of the headquarters building knew it was

big and probably about a settlement. Perhaps the good news would be that the long trial was over and life in the Bell System could proceed, albeit possibly with some minor changes. Instead, the managers received the incredible shock that AT&T would divest the BOCs. The managers brought to AT&T General Headquarters were promptly returned to their home companies and played key roles in orchestrating the break-up. The traditional Bell System faced a challenging and uncertain future.

1.1 Key Points

This study makes six key assertions regarding Bell System restructuring:

1. Momentum toward divestiture began in the 1950s, which is well before most histories indicate.
2. Competition in Customer Premises Equipment (CPE) was the leading component.
3. The BOCs were key to the process, even though most historical attention rests with AT&T Headquarters.
4. Industry standards were critical, but difficult to achieve.
5. The Bell System attitude of invincibility, due to their size and importance to society, was a significant factor in their loss of a monopoly position.
6. In the end, a break-up would be done and competition would be good.

1.2 Overview of the Story

Forces emanating from customers and competitors and from technological advancements all played roles in pushing the movement toward divestiture. The political and deregulatory tide initially gained traction in large measure because of what was happening with the equipment on the premises of the customers. This equipment was

installed, owned, and maintained by the serving BOCs and connected to the local network of the BOC. Developments at that level were key to propelling forward deregulation and influencing politics in opposition to the BOCs and their parent company, AT&T.

The reality in business is that the ultimate motivator is profit. This study considers that emerging competitors sought profit while the embedded operators, the BOCs, aimed to protect profit. Within this context, technology was an enabler and governmental agencies responded to their clientele (who were voters as well as users). In addition, standards bodies served as enablers and were driven by multiple clients which included the embedded telecommunications providers, new entrants, equipment manufacturers, governmental bodies, and telecommunications users.

This opening of the telecommunications system required extensive interconnection standards negotiations and agreements. Significant examples where many players debated open standards involved new suppliers of equipment to be installed on the customer premises in addition to alternatives to the BOCs for transport and switching services. As data communications grew, large business customers sought options for providers to reduce expenses. In the cases of both voice and data communications, all parties had to agree upon interface standards to enable interconnection between the BOCs, the CPE, and the emerging transport and switching competitors.

Both technology and politics were certainly critical components. Technological advances at times facilitated or even helped to create momentum for restructuring. Policy initiatives were necessary to open the doors. But it was technology that enabled effective competition. This dissertation recognizes both components but explores more deeply than

other historical works into the technological aspects. One example where the power of new technology was acknowledged is when a reporter for *The Wall Street Journal* wrote in February of 1981, "The 1934 act[2] gave AT&T a monopoly, but technological advances have greatly changed the competitive environment."[3]

The Bell System companies manufactured, installed and maintained switching, transmission, and terminal components. The first two categories were equipment in a BOC central office and in transmission links that made up the distribution network. Terminal equipment operated on the customer premises. The focus herein is on the production, installation, and maintenance of terminal equipment on the customer premises (CPE). Examples were the basic single-line telephone set, teletypewriter equipment, data sets, and switching equipment servicing only one customer. The type of switching equipment serving as CPE was a private branch exchange (PBX), which connected individual stations on a customer premises with one another and with the public telephone system. Also, important in the time frame of this study, are key telephone systems (KTS) which used lighted multi-button telephones that allowed the user to be connected to one of several outgoing telephone lines or PBX lines. And finally, the advent of data terminals was very important especially because of the large and powerful competitors it introduced (i.e. IBM).

The subject of the breakup and its aftermath remains of great interest today. The goal of this dissertation is to contribute to a better understanding of the long story by focusing on particularly relevant aspects. Movement toward a breakup began with the

[2] This is a reference to the Telecommunications Act of 1934 which Congress established to specify how the industry would operate. It stayed in effect until the Antitrust Case brought by the Department of Justice against AT&T was settled in 1982 and a new Telecommunications Act was passed by Congress in 1996.
[3] Robert Taylor, *The Wall Street Journal*, 2/11/1981.

appearance of competitors desiring to sell telecommunications equipment to be located on the premises of customers (CPE) and the endorsement of state and federal regulating agencies for this prospect because of their concern that incumbent operators, which leased rather than sold CPE, were using inordinately high profits from the leases to improperly subsidize pricing of network services. The Bell System contended these subsidies were necessary to fund the costly operation of services in remote areas and hence to continue to provide Universal Service[4]. Regulators perceived Bell's position to be an attitude of invincibility exhibited through invoking apprehension over the loss of Universal Service which would unfairly impact the more remote and low-income areas of population. This attitude had the opposite effect than what was desired as the size of power of the Bell System concerned governmental policy-makers. In this regard, it is important to also understand the role of the parent company, AT&T, as compared to that of its subsidiaries, the BOCs. Finally, it is critical to appreciate the impacts of new technologies on the overall story. The timing of these events was made possible by advancements in telecommunications technologies, many of which came from the Bell System through Bell Labs.

1.3 Literature Review

Many good books approach the subject through the lens of policy. While they may acknowledge technological forces, they typically emphasize institutional factors. One offshoot of that approach is a failure to consider in detail what happened closer to the ground where decisions were made and impacts were directly felt by the BOCs. Historical

[4] Universal Service in the context of this dissertation means basic voice service widely available to the public at affordable rates.

events can be viewed from different perspectives. World War II can be viewed from the position of the government officials who took positions which led to the conflict, from the generals who executed it or from the soldiers in the trenches. Similarly, changes in the telecommunications industry can be viewed from the perspective of state and federal government regulators, top management in AT&T and its competitors, or from those in the trenches; meaning employees at all levels in the BOCs. Much has been written from the viewpoints of the first two, but comparatively little from the view of those in the BOCs. With the goal of adding to the historical record, attention in this work is given more to the operating companies, rather than to AT&T headquarters.

Jeremy Tunstall discussed the shift that occurred post-World War II, "From static regulated technology to dynamic unregulated technology?"[5] He described how telecom deregulation efforts in Washington involved five areas of politics: The White House, Congress, the courts, federal agencies, and lobbyists. These are important, but Tunstall understated the significance of state politics. Robert Horwitz in *The Irony of Regulatory Reform: The Deregulation of American Telecommunications* noted that deregulation of telecommunications was considered by some to be a consequence of changing technologies. However, he deferred to the political process as being of greater consequence.[6] A comprehensive book on movement from regulation to deregulation is by Thomas McCraw entitled *Prophets of Regulation*.[7] Another is by Richard H. K. Vietor

[5] Tunstall, Jeremy. *Communications Deregulation: The Unleashing of America's Communications Industry* (New York: Basil Blackwell, 1986).
[6] Horwitz, Robert Britt. *The Irony of Regulatory Reform: The Deregulation of American Telecommunications* (New York: Oxford University Press, 1989).
[7] McCraw, Thomas K. *Prophets of Regulation: Charles Francis Adams; Louis D. Brandeis; James M. Landis; Alfred E. Kahn* (Cambridge: Harvard University Press, 1984).

entitled *Contrived Competition*.[8] It would be wrong to argue these forces are unimportant. This dissertation merely suggests that forces of technology are typically understated regarding their power to drive political actions in comparison to the attention given to economic and sociological forces.

Alfred Kahn argued in, *The Economics of Regulation: Principles and Institutions*, that although telephone service costs increased when measured solely in terms of the number of customers, it was important to recognize that the addition of each new subscriber did improve the quality and value of service for all by increasing the number of stations that could be reached. However, a monopoly was only inherently natural if one company could serve any given number of customers (for example, all in a community) at a lower cost than multiple companies would be able to do.[9] Kahn challenged the applicability of this theory of "network effects" when pursuing airline deregulation during his tenure as Chairman of the Civil Aeronautics Board in the late 1970s. He believed different industries required different governmental oversight. This was particularly relevant to airlines, but also to telecommunications. Like the airlines, Kahn contended for public utilities, including telephone service, the desirability of a regulated monopoly was dissolving.

In his book, *The Myth of the Machine*, Lewis Mumford investigated the relationships between man and machine and advanced the theory of technological determinism.[10] This theory was expanded by Thomas P. Hughes, who argued that while it was true technology shaped society it was also true that societies shaped technology. In

[8] Vietor, Richard. *Contrived Competition* (Cambridge: Harvard University Press, 1994).
[9] Alfred Edward Kahn, *The Economics of Regulation: Principles and Institutions* (New York: John Wiley & Sons, 1970)
[10] Lewis Mumford, *The Myth of the Machine: Technics and Human Development* (New York: Harcourt, Brace, Jovanovich, 1970)

1983, Hughes established his position of eminence with the publication of *Networks of Power: Electrification in Western Society 1880-1930*.[11] This analysis is particularly relevant to consider when investigating telecommunications evolution because of parallels between systems of electrification and systems of telecommunication. In 1987, Hughes was a major contributor to a collection of essays which addressed varied technologies from 13th-century galleys to 20th-century missile systems.[12] The theme was to give equal weight to technical, social, economic, and political questions. His many works through the years had unparalleled impacts on shaping studies of the complex sociotechnical networks that comprise our modern world.

The Economics of Innovation in the Telecommunications Industry by John McNamara stated that the breakup of AT&T provided a historical opportunity to evaluate the impact and value derived from policy actions as they relate to technology evolution in an industry before and after restructuring.[13] Milton Mueller developed his insights from a historical analysis of the concept of Universal Service. His book begins in the early 1900's and progresses through to the Telecommunications Act of 1996. Mueller contended the goal of Universal Service was to achieve and maintain affordable nationwide telecommunications by means of rate averaging and cross-subsidies. He argued telephone companies and state regulators believed a regulated monopoly structure was necessary and

[11] Thomas Parke Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore, Md.: John Hopkins Univ. Press, 1983)
[12] Hughes, Thomas P. "The Evolution of Large Technological Systems," in Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, Mass.: MIT Press, 1987).
[13] McNamara, John R. *The Economics of Innovation in the Telecommunications Industry* (New York: Quorum Books, 1991).

competitive market forces had to be subdued to achieve the Universal Service goals.[14] Also of value, regarding the years leading up to the Telecommunications Act of 1996, is a work by Patricia Aufderheide which examined how and why the 1996 Act was developed. Aufderheide analyzed the 1996 Act thematically and charted its intended and unintended effects on business and policy immediately after enactment.[15]

Telecommunication Policy for the Information Age: From Monopoly to Competition by Gerald Brock examined the evolution of telecommunication policy in relationship to changing technology, industry structure, and industry responses to previous policy decisions. Brock described his book as an "attempt to integrate his knowledge from the FCC with academic literature."[16] His writing was woven from a wealth of direct experience as previously he was Common Carrier Bureau Chief at the FCC. While that knowledge is valuable, it does tend to provide a perspective skewed toward AT&T rather than the BOCs. An extensive study on AT&T divestiture is *The Fall of the Bell System* by Peter Temin and Louis Galambos. The work traced and analyzed the events which resulted in the breakup of AT&T. It was commissioned by AT&T Chairman, Charles Brown, who granted access to AT&T officers and documents. As valuable as this is, the fact remains that it was written from an AT&T point of view and did not fully address the perspectives of the BOCs.[17]

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[14] Milton L. Mueller, Jr., *Universal Service: Competition, Interconnection, and Monopoly in the Making of the American Telephone System* (Cambridge: MIT Press, 1997).
[15] Patricia Aufderheide, *Communications Policy and the Public Interest: The Telecommunications Act of 1996* (New York: Guilford Press, 1999).
[16] Brock, Gerald W. *Telecommunication Policy for the Information Age: From Monopoly to Competition* (Cambridge: Harvard University Press), 1994.
[17] Temin, Peter, and Louis Galambos. *The Fall of the Bell System*. New York: Cambridge University Press, 1987.

Competition in Telecommunications by Jean-Jacques Lafont and Jean Tirole is a book aimed at a wide audience of business executives, government officials, and academics. It focused on the policy and economic implications of governmental predisposition toward development of increased competition in previously monopoly-based network industries. The authors contended the movement toward incentive regulation and competition in telecommunications was at the forefront and thus could be viewed as an indicator of what other network industries would face.[18] However, telecommunications was only one of multiple increasingly complex network systems. Railroads are a prominent early example which in multiple ways presaged what would occur in the telecommunications industry. Steven W. Usselman in his book, *Regulating Railroad Innovation,* explores many of the elements of the railroad system.[19] One major issue was that it became impractical for a nationwide rail system to function as a network of different service providers unless there were agreed upon standards. In this regard, Usselman examined the issues involved with standardizing the technology of steel rails. As increasingly complex systems became more integral to business operations, the importance of standards continued to grow. These topics are addressed by James R. Beniger in his book on the Information Society.[20] In another recent work, Philip Scranton and Patrick Fridenson cite standards and standardization as one of the areas that business historians might profitably study.[21] An extremely valuable work which delves into how

[18] Lafont, Jean-Jacques, and Jean Tirole. *Competition in Telecommunications* (Cambridge, MA: MIT Press, 2000).
[19] Steven W. Usselman, "Chapter 6," in *Regulating Railroad Innovation: Business, Technology, and Politics in America, 1840-1920* (Cambridge, U.K.: Cambridge University Press, 2002), 215-241.
[20] Beniger, James R., *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge: Harvard University Press, 1986).
[21] Scranton, Phillip and Patrick Fridenson, *Reimagining Business History* (Baltimore: Johns Hopkins University Press, 2013).

standards-setting became a central element of our political economy, with attention to information networks, is *Open Standards in the Digital Age* by Andrew Russell.[22]

1.4 Other Sources

Recently opened archival files of the former BOCs were extremely valuable in understanding the roles of and impacts upon these companies. Roles of the BOCs and impacts upon them are most often relegated to a subservient position. The attention of the media, potential competitors, large business customers, and rulings of governmental agencies generally tended to focus on the AT&T parent company. However, for this study, much of the relevant detail on roles of various actors was found in the BOC archives.

Rather than study all the BOCs, the primary sources were selected from files of the Southwestern, Illinois, and Pacific companies. These companies were at the forefront of BOC activities and access was available to extensive archival records and other sources of information. Each of the archives contained sources that the others did not. For example, Southwestern had more general management policy communications, Illinois Bell had more technology documents, and Pacific Bell had more customer and media relations documents. To go beyond these three was not likely to add much value because it would have become mostly duplicative.

The archives of today's AT&T contain records of 11 of the 22 BOCs. In the years after divestiture, the former Southwestern Bell bought the former Pacific Bell, Nevada Bell, Southern New England Telephone, Illinois Bell, Indiana Bell, Michigan Bell, Ohio Bell, Wisconsin Bell, Southern Bell and South Central Bell. In 2005, Southwestern Bell

[22] Russell, *Open Standards and the Digital Age*.

Corporation bought the legacy AT&T and with it got rights to the AT&T name. All archives of the above-named BOCs were consolidated in their facility located in San Antonio, Texas. Records of the original AT&T Headquarters, AT&T Long Lines, Western Electric and Bell Telephone Labs are housed in Warren, New Jersey and are managed by the same Director of Archives who oversees the San Antonio center.

An advantage of undertaking this work now is that AT&T has a 30-year prohibition on outside access to many of the internal documents in its archives. Access for this study was permitted to archived documents to the beginning of 1987. This goes to three years after the company was split apart. The Director of Archives stated that the New Jersey location, which focuses on the legacy AT&T headquarters, their long-distance company, the R&D labs and the manufacturing company attract a significant number of researchers. However, the operating company archives in San Antonio hosts only about 3 or 4 researchers each year. The two components of fortunate timing and a focus on the BOCs yielded the opportunity to contribute to the base of knowledge beyond what had been previously studied from a scholarly historical perspective.

In San Antonio, files which were examined contained internal communications among BOC management and with AT&T headquarters, information reports provided to all employees, communications with customers, publicity releases, media coverage, legal/regulatory documentation, and interactions with standards bodies. These extensive records address technology advances, strategic plans, deployment plans, implementation initiatives and related concerns. They provide the BOC's view of competitor actions and their perception of motivations for governmental proceedings. Also, in these files are

various documents presented by current or potential future competitors and other opponents to the positions of the BOCs.

Federal and State archives were also worthy of investigation. These included publications and records of the DOJ, FCC, Executive Agencies, Congress, and state Public Utility Commissions. Research conducted at the Jimmy Carter Presidential Library also provided useful information on federal actions and positions during the 1977 to 1981 period (a timeframe of interest because it led to the AT&T antitrust settlement in January 1982). Records on the positions and activities of non-governmental organizations, such as the United States Telephone Association, consumer activist groups, unions, and standard bodies, provided insights of value as they were actors in the process. Media accounts from multiple publications were also reviewed and provided insights on public opinions.

Identifying and understanding the perspectives of the BOCs was also achieved through discussions with individuals who were in key positions across multiple departments at multiple levels beginning in the late 1960s. Some of these individuals may have worked at AT&T headquarters for a part of the time frame of interest, but the BOCs were their home. It was not at all surprising to find the emergence of a consensus that the story of divestiture, in their opinions, has continuously understated the role of the BOCs.

1.5 Background

As telephone service in the United States developed in the 19th century, there was a duplication of facilities in the telephone industry and technology was not far enough advanced to avoid impairment of service and increased costs to the users. The question arose as to how best to ensure that monopolies did not take advantage of their position to

charge beyond what was a reasonable price while also encouraging them to spend money to innovate and improve their services without the impetus of competition. Paul Starr delves many of these issues in his analysis of the role of government in media and communications. He contends control can reside in private hands until critical moments when it becomes in the public interest for politics to take over. Business should be about more than just the marketplace and profits.[23] It was in this vein the U.S. Supreme Court affirmed in 1877 that state commissions could regulate prices charged by "businesses affected with a public interest."[24]

1.6 Chapter Overview

Chapter 2 describes the early issues and debates surrounding the process of deregulating the telephone business. The focus is on the period from the beginning of telephony until the 1950s. In Chapter 3 technology and associated processes leading to competition in Customer Premises Equipment (CPE) are identified and their impacts evaluated. It describes the changes required within the BOCs to effectively operate in a competitive environment. The significant impacts on telecommunications which emerged during the early period of President Jimmy Carter's time in office are examined in Chapter 4. In this period technology emerged as a major driver of change and politics sought to establish a proper role for government in adapting the regulatory climate to those changes.

The position of the Carter administration regarding deregulation toward the end of his time in office is addressed in Chapter 5. Impacts of policy decisions on the telecommunications industry are examined. Chapter 6 reviews the final steps in the process

[23] Paul Starr, *The Creation of the Media: Political Origins of Modern Communications* (New York: Basic Books, 2004).
[24] U.S. Supreme Court, Munn v. Illinois, 94 U.S. 113, 125-26 (1877).

leading to the break-up of the Bell System. Also, the subsequent actions required to implement the government ruling are described. AT&T was ordered to divest the Bell Operating Companies (BOCs) effective on January 8, 1984. Chapter 7 reviews impacts of the divestiture decree and subsequent governmental actions. It covers the adjustments to telecommunications policies made by Congress in the 1996 Communications Act, which replaced a 1934 Act, and ends with the presentation of overall conclusions.

CHAPTER 2. THE REGULATORY BACKGROUND

This chapter provides with a brief overview of the initial advantages available to the Bell System in their early years and how their position changed with time. It addresses conditions which encouraged competitors to seek entry into previously monopoly services provided by the telephone companies. The period of interest runs from the earliest years of telephones until the middle of the 20th century.

During this early time frame, potential new entrants began to see opportunities to undercut prices charged customers through using an approach known as "cherry-picking." This terminology referred to the entry by competitors into services which were artificially priced high by the incumbent telephone company to enable keeping the price of basic services low. The goal of low pricing was encouraging the expansion of users for the benefit of the nation. Of course, it was beneficial to the telephone company as well.

2.1 The Early Years

A great advantage enjoyed by Bell Telephone at the beginning of the telecommunications industry came from patent laws. As Christopher Beauchamp described in his book, *Invented by Law*, there were considerable questions concerning the identity of the true inventor of the telephone.[25] Today we accept it was Alexander Graham Bell, but the reality is that lawyers and judges debated at great length concerning what it meant to be the first person to create the technology and to describe it in a fashion that was the most effective for registration of a patent. Hence, the proposition by Beauchamp that the telephone, and other inventions as well, were assigned to owners by patent laws and by

[25] Christopher Beauchamp, *Invented by Law: Alexander Graham Bell and the Patent That Changed America* (Cambridge, MA: Harvard University Press, 2015).

the lawyers whose arguments were the most persuasive. For American Bell, later known as AT&T, the first patent was only the beginning of a long history of domination of the communications industry which was based largely on legal ownership of key inventions.

There was an effort by Western Union Telegraph Company to enter the telephone business using the inventions of Thomas Edison and Elisha Gray. Bell sued for patent infringement and won the case in 1880. The settlement ensured control of the telephone business by Bell until 1894 when the last patent protecting Bell's original invention expired.[26] Despite this expiration, Bell still fought continuing legal battles to protect its monopoly. However, across the country rival companies jumped into the market for phone service and battled for the right to serve the same territory. The result was that some customers had to purchase service from multiple companies to be sure they could reach all the people they might want to talk with over the phone. This was unpractical and provided the motivation for federal laws establishing phone service as a 'natural monopoly" to be provided under a system of regulations under the purview of the individual states. This was codified in the Communications Act of 1934.

In his book, *Network Nation*, Richard K. John provides an excellent and detailed history of the early years of the telephone business in the United States. Of special interest are the insights concerning arguments surrounding Universal Service, which for many years provided cover against those who sought to compete with the monopoly of the Bell

[26] The importance of making and defending patent claims is noted by George Smith: "Typical of the organization of all the major firms in the electrical industries, telegraph and telephone company organization 'crystallized around patent rights,' . . . Survival (in that as well as in most emerging high-technology businesses of the era) required almost obsessive attention to patent claims wherever they arose." George Smith, The Anatomy of a Business Strategy (Johns Hopkins/AT&T Series in Telephone History 1985).

Companies. John quotes the AT&T president, Theodore N. Vail, who in the annual shareholder's report of 1910 foresaw the day when there would be a "universal wire system" that was as extensive as the road system leading from everyone's door to every other person's door. When that dream was achieved, the goal of continuing it was key in holding off efforts from would-be competitors. John provides descriptions of how the attacks and counter-actions continued over most of the 20th century until AT&T eventually was overcome.[27] Even though the Universal Service "shield" was penetrated, the explanations and insights from John are most valuable in understanding why it lasted so long as it did.

2.2 Perspectives on Regulation

Theodore N. Vail, AT&T's first president, recognized the need to act. In 1907, he called for regulation of the telecommunications industry on the premise that it qualified as a natural monopoly being operated in the public interest.[28] In agreement with that position, state legislatures added telecommunications to their list of natural monopolies for which they were in the process of creating agencies to regulate at the state level. The first such agencies created were in the states of New York and Wisconsin.

In 1910, the Interstate Commerce Commission began regulation of interstate telephone communications. Later, The Communications Act of 1934 created a federal agency, the Federal Communications Commission (FCC), "For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make

[27] Richard R. John, *Network Nation: Inventing American Telecommunications* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2010).
[28] Louis Galambos, "Theodore N. Vail and the Role of Innovation in the Modern Bell System," *Business History Review* 66, no. 1 (Spring 1992): 101-103.

available, so far as possible, to all people of the United States a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges . . ."[29] This Act specifically exempted the FCC from jurisdiction over intrastate charges, classifications, practices, services, facilities or regulations. Telephone companies argued that these forms of regulation worked and universal service at low prices had been achieved. They further argued that the network is a constantly changing system which requires extreme care to ensure that modification of one part does not adversely affect the whole. They contended this was achieved because the regulatory agencies were effective in holding the telephone companies responsible for providing quality service at a reasonable cost. To accomplish this required the system to be based upon the "end-to-end" service concept and included equipment on the premises, local cables, switching machines and inter-machine transmission. Consequently, the system worked best when designed, built and maintained by the regulated monopoly of the telephone companies.[30]

In his book, *Shaping American Telecommunications*, Christopher Sterling also recognized the importance of telecommunications public policy because, unlike most other countries, in the United States the government role was never one of ownership, but of regulation. Sterling goes on to contend, "More than other sectors of a nation's economy, telecommunications operates through a unique melding of technology, economics, and policy."[31]

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[29] United States 73rd Congress, Communications Act of 1934, Public Law No. 416, TITLE I Section1, June 19, 1934.
[30] AT&T, *A Competition Issue* publication, March 4, 1974.
[31] Christopher H. Sterling, *Shaping American Telecommunications: A History of Technology, Policy, and Politics* (Mahwah, NJ: Lawrence Erlbaum Associates, 2006), 1.

The pricing of local service by the BOCs was required by regulators to be kept low but regulators did permit increasing the price of long distance service to subsidize local service. The result was that entry into long distance service was attractive to competitors who were not required to provide the less profitable local service and who also did not have the legacy plant which was less cost effective to operate than newer technologies. The BOCs also were required to provide "universal service" which meant serving some very unprofitable locations, such as rural areas. As emphasized by Mueller, this accounts for much of the cross-subsidy necessary to achieve the objective of wide availability and affordability of telephone service which was at the heart of universal service. However, Rate of Return (ROR) regulation did enable the BOCs to increase their overall revenue by investing more. Depreciation rates for major investments such as new switches or cables were negotiated with regulators. Also at issue was what expenditures would be capitalized or expensed. If capitalized and depreciated over a long period (typically 30 years for a switching system) then the pricing of services allowed by regulators could be based on a higher investment. Thus, investment expenditures in a monopoly environment are more favorable the longer the depreciation period extends. In a competitive industry, however, depreciation rates must be tightly managed by service providers in order to achieve competitive pricing while maintaining a return on investment which meets the expectations of investors.

Another consideration for the BOCs was that they were required by AT&T headquarters to pay a "license contract" charge to AT&T for the right to operate in licensed areas and to support the AT&T headquarters staff. There were multiple forms of oversight for the BOCs to deal with on these and other issues. At the federal level, there was the

FCC, DOJ, and Congress. There were also state utility commissions, which set rates and rules. City councils controlled right-of-way for cables and, in some locations, also set rates.

2.3 Views of Competition

Beyond the merits of competition for the customer, the case could be made there were advantages to the BOCs also. The telephone service providers operated in a capital-intensive industry. The Pacific Telephone Company testified in a 1975 rate increase case that they had to significantly reduce their capital program and delay $50 million per year of improvements to avoid a decline in bond ratings and increased cost of debt. Over the same period, the capital impacts of installing company-owned residential telephones averaged $150 million per year. This investment would be avoided if customers could purchase the instruments. It is especially enlightening to consider that in the same rate case the telephone company argued that they lost money on each telephone extension. In this situation, why would a BOC not agree to allow customer-owned equipment?[32] The answer was because, under rate-of-return regulation, a greater capital investment meant greater revenue. Therefore, even at a loss, it could be desirable to increase investment to drive up the rate base. Beyond the financial impacts, another part of the answer was due to the long-held tradition of a focus on service quality and reliability. There were fears that losing end-to-end control would cause negative impacts not only the customer base but also the many employees who took great pride in being part of the Bell System.

Still, some independent voices of concern over the changes made their way into the media and public consciousness. The financial editor of a major newspaper argued that the

[32] Ibid.

regulated local phone companies were charged to provide 'universal telephone service' to the widest number of customers at the lowest possible cost. Basic CPE and local phone service could be provided at a price less than the cost, with the difference made up by the telephone company charging higher rates for other kinds of equipment and services. This would no longer be possible when the government enabled competitors to enter only the most profitable parts of telecommunications.[33] It was an argument that was in the minority.

Andrew Davis makes the case that during the 1970s, the service requirements of large, multi-location businesses for data transmission between computer sites in the emerging digital technology environment could no longer be adequately met by monopoly, regulated telephone operating companies mandated to provide universal service, were controlled by a central headquarters, and dependent upon an in-house supplier. Corporate users and electronics manufacturers joined the campaign to break apart the Bell System and enable new providers to meet their needs. In order to achieve the innovation and flexibility they needed required an open architecture with full and free competition. This is demonstrated by the fact that many large corporations began building their own private systems. General Motors and Walmart are notable examples. An extreme example was Bank of America. By 1985, it owned and operated seventy-six separate data networks. The bank's control center was unable to effectively monitor all the different networks, and many of the networks were unable to support new applications such as networked ATM Machines and money transfer systems. Network planning and control were in the hands of the bank's systems engineering headquarters, but network maintenance responsibility

[33] Donald Bauder, *San Diego Union*, April 30, 1976, C-8.

was mandated to reside with the operating telephone companies who owned the facilities but had diverse priorities.[34]

The preferred solution for large businesses was the latitude to turn to one specialized data operator. Consequently, a split emerged between the societal requirements for universal basic telephone service and the private demands for specialized digital services and technologies. Large corporations which required a nationwide or even worldwide telecommunications network capable of transmitting and receiving data between computers, at low cost, wanted greater control over terminal equipment attached to their private networks. Two schools of thought emerged. One view held that during a period of dynamic technological change, a private corporation provided the greatest and most effective spur to expansion and modernization while government control is unnecessarily bureaucratic and unresponsive to change. Under competition, private companies could seek out new markets and serve otherwise unsatisfied demand.

The contrasting view was from the more traditional interests, including regulators and unions. These groups argued for government controls over monopolies on the grounds of efficiency and social equity. They believed economies of scale and scope were so large in the telecommunications sector that multiple competitors would never match the efficiency attained by a single company. This contrasting view held that the growing number of private providers of transmission and terminal equipment reduced the volume of sales for any one provider which then increased the costs for the residential and small business users of a public system. One consideration, not given adequate credence, was

[34] Davies, 10-13.

the size of the telephone industry. Such a huge volume of products should be expected to be able to support many suppliers. In addition, another impact was thought to be a weakening of governmental ability to promote social equity and national economic development. Unions anticipated more difficult labor negotiations due to more providers being involved.[35]

Despite the presence of opposition, movement toward competition clearly continued to gain momentum from the digital revolution. Eventually, this revolution entailed the actual merging of computers and communications. Open interfaces for interconnection of equipment and services from diverse providers were essential to the success of the movement toward open competition. Detailed specifications for standards were required as they were in other systems, such as the railroad, gas or power industries. Indeed, equal access to customers could not be achieved without standard network terminating equipment and an agreed upon open network architecture. This is well covered in *Open Standards in the Digital Age* by Andrew Russell.[36] The process of negotiating standards to achieve openness across various network providers was complex because of the many diverse players with varied motivations. To illustrate this point, there were about 150 different kinds of special service circuits, each having a different configuration and using different equipment at the ends. Special service circuits were used for capabilities such as automated teller machines, host-to-host data communications, and voice circuits. Service on a given special service circuit could be provided by several network providers. As with any telecommunications circuit, special service circuits failed from time to time.

[35] Ibid.
[36] Andrew L. Russell, *Open Standards and the Digital Age* (New York: Cambridge University Press, 2014).

When a customer reported trouble with a circuit, a test was made to determine the cause. This test was accomplished by an intelligent network terminating device which was remotely activated. After activation, the device measured the frequency and level of signals sent from a testing location utilizing a computer-based, one-person, remote-access-and-test-system. The system was designed to provide access and testing functions over a central interface, normally located at a service center. Intelligent devices made by different manufacturers had features that were functionally identical but activated differently. To further complicate matters, various local providers attempted to standardize intelligent features and operations to their own internal use without regard to the practices and procedures used by other local telephone companies or other long distance providers.[37] Even though there were significant challenges, it was possible to accomplish the objectives. By the early 1990s, The United States, and most other modern countries had liberalized terminal equipment and information services. The United States was among the most aggressive as evidenced by the successful implementation of the 1984 break-up of the Bell System and its replacement by a multiple-player system while retaining and growing an advanced and reliable telecommunications capability.

2.4 Roles of AT&T and the BOCs

Overarching decisions were made at AT&T headquarters. However, the BOCs provided input to AT&T headquarters and were the primary interface with state and local governmental entities. The BOCs also managed relations with customers, labor unions,

[37] Ackroff, John. Patent Publication US5105438 A, AT&T Bell Labs, 1990.

suppliers, competitors, and media outlets. Finally, the BOCs also held ultimate responsibility for implementation.

From the vantage point of today, some things are indeed clearer. But, questions which can be more deeply investigated do remain. In what ways does the evolution of the telecommunications industry compare to other large deregulated systems-based industries? How and when did significant competition develop with CPE as the early driver? What were the interrelationships among the main drivers of divestiture? What were the roles of the BOCs before and after divestiture? And finally, how did standards figure into the picture?

Beyond the fact that our world has been profoundly altered by new communications capabilities and an evolving telecommunications industry structure, there are also numerous parallels to other business areas. Other industries have similarly been moved from regulated to deregulated, and from monopolistic to competitive. Industries that provide services to the general public (railroads, airlines, gas, and power) have dealt with many of the same issues as telephone companies. Government oversight and assignment of limited resources (airline terminals, right-of-ways, rate setting, and the number of allowable providers) have evolved over time. These parallels make this dissertation relevant to those who study other industries that have had comparable regulatory pressures, pursued similar opportunities, and served the public.

2.5 On the Road to Full Competition

The movement toward CPE provided by the customer was only a very first step on the road toward ending the telecom monopoly. Recognizing the necessity of maintaining Universal Service while enabling competition and advancing innovation was a major political and regulatory challenge. Every initiative aimed at creating the optimum competitive environment was violently opposed by the Bell System. The FCC put the first chink in the BOC's armor of being the sole end-to-end provider by granting authorization to a CPE competitor in 1956. That company was Hush-A-Phone. It enabled privacy by a user in a manner somewhat like simply cupping your hand over the transmitter.

The next CPE competitor, Carterphone, moved a bit farther by acoustically connecting landline service to radio communications. Carterphone was granted approval by the FCC in June 1968. It was required to use an interface device provided by the BOC. By 1973, a variety of "hard-wired" CPE were permitted. Then, in 1977, CPE was no longer required to use a BOC supplied interface so long as their equipment had been tested and approved by an independent engineering board.

There was another separate landmark filing for telecommunications competition before the FCC in the same period as the Carterphone debates. The other request was pressed by a newly formed company named Microwave Communications Incorporated (MCI). It involved competition in the telephone network itself, rather than the premises equipment. MCI requested the authority to build and sell special services through their privately owned and operated communications channels between Chicago and St. Louis. The FCC's Common Carrier Bureau strongly recommended that the FCC approve the service. It would mean construction of parallel and competitive facilities to the incumbent

regulated monopoly of AT&T. The FCC request was given final approval by the FCC in August 1969.

The advent of transport providers, such as Microwave Communications Inc. (MCI), who gained the right to sell private line voice and data circuits and later to be granted Equal Access (EA) to local Telco networks by their previously private line customers, continued the pressures. To enable connections to various providers of CPE and of transport required standards for equipment to terminate network channels of both the BOCs and the transport competitors. Motivations, actions, and degrees of success by the various actors are explored and assessed in this dissertation.

Clearly, the motivations for, and the approach by government toward, regulation has changed over time. Forces created by wars, economic cycles, and technological advances had their impacts. As an example, a few railroad companies once had control of the market and passengers or transporters were confined to go where and when the railroad operators decided.[38] With the technology of the Interstate Highway system, users had a much greater choice of where and when. Similarly, radio and television used to confine customers to hearing and seeing when and what others decided. Now, with the internet and information age, users hear or see what they want and when they want – plus they can add their own content. The book, *Prophets of Regulation* by Thomas K. McGraw addresses time periods and forces at work regarding regulation grouped by the leaders who

[38] Although typically not a monopoly, except in some local areas, they were a national oligopoly. The term refers to a market structure in which a small number of firms has the large majority of market share. An ***oligopoly*** is similar to a monopoly, except that rather than one firm, two or more firms dominate the market and have control over the services or goods supplied as well as the prices charged.

exemplified their era.[39] According to this book, regulation as a whole assumed enhanced importance during four specific periods of United States history. McCraw identifies these as the 1870s, early years of industrialization; 1900-1916, the Progressive Era; the 1930s, Roosevelt's New Deal; and the 1970s. McCraw points out in this book that the 1970s were unique because during that period both regulation and deregulation somehow grew simultaneously. McCraw praised Alfred E. Kahn and the movement toward deregulation which President Jimmy Carter made a priority.[40] This deregulation movement during the Carter administration was a significant factor in the eventual break-up of the Bell System. *Prophets of Regulation* was published in 1984, the year when the Bell System break-up was implemented.[41] Richard H. K. Vietor similarly points to the two periods of the 1930s and the 1970s, which he calls The Great Depression and The Great Stagflation, as framing an era of regulation.[42]

Louis Galambos explores the institutional and cultural orientation of AT&T which Vail created and his successor, Walter S. Gifford, continued. It was a commitment to technological progress while maintaining the highest possible quality and affordability of service. Galambos notes the Vail philosophy was so ingrained in the Bell System companies that it was firmly held until the 1970s.[43] Initially, this meant pricing long

[39] McGraw.
[40] Ibid.
[41] An article by McCraw published in 2009 seems to take the position that deregulation was a failure because it brought on the severe economic recession of 2008. McCraw wrote that without the rigorous oversight of regulation, ". . . movement of vast sums from the regulated sunshine to the unregulated shadows became inevitable." Although he supported strong Security and Exchange Commission controls over the financial industry, he did not address increased regulation in other areas. It appears reasonable that he believed regulation would be justified in some areas, such as financial transactions, but not in others, such as telecommunications. See, Thomas K. McCraw, "Regulate, Baby, Regulate." *The New Republic* 240, no. 4 (March 18, 2009).
[42] Vietor.
[43] Galambos, Louis. "Theodore N. Vail and the Role of Innovation in the Modern Bell System." *The Business History Review* 66, no. 1 (1992): 95-126.

distance, which was capital intensive and expensive to maintain, below its cost to provide. The rationale was to encourage customers to purchase local service for the purpose of calling long distance. As technology advanced, the cost factors changed and long distance became more profitable than local service. The disparity between costs and prices of long distance and local service was an accepted condition under the regulated monopoly model. Long distance, as well as business services, subsidizing local residential service in order to keep those rates low was considered to be in the public interest.

2.6 Judicial Actions

In 1956, the DOJ settled with a consent decree a suit that alleged AT&T's equipment subsidiary (Western Electric) controlled the telephone equipment market in violation of the Sherman Antitrust Act. The suit argued that AT&T had granted exclusive licenses to Western Electric and required its operating companies to make purchases only from them. The DOJ's proposed remedy was a complete divestiture of Western Electric and a requirement for the BOCs to make their purchases in a competitive market. Instead of the entire divestiture of Western Electric, there was an agreement by AT&T to divest selected non-telecommunications related business units and to make its portfolio of patents available on a royalty-free basis. In an effort to avoid legal actions, AT&T had already offered before the suit was filed to make patents available at a reasonably low charge and had made the transistor available on that basis. AT&T emerged the winner in this case since they retained Western Electric and could still require the BOCs to purchase equipment solely from them. There was a congressional investigation, but it was concluded that the suit would not be won by the DOJ because it could be argued that the FCC had jurisdiction and would adequately regulate the business. Further, there was concern that

divestiture of Western Electric may, in fact, lead to higher cost of equipment and therefore higher telephone rates.[44] However, it did signal the beginning of a 40-year long process in the policy making arena which eventually revolutionized the industry. Technological advancement reinforced the viability of change.

2.7 CPE Interconnection

The movement toward competition in the telephone business continued to proceed forward in the United States. In the 1960s, the FCC proposed that it would be in the public interest to encourage competition in the provision of CPE. Telephone company policies had proceeded to foreclose the potential for competition by requiring customers to obtain CPE exclusively from them.[45] Since early in the 20th Century, the telephone industry was regulated on both the state and federal levels.[46] In 1968, the Federal Communications Commission took the lead by issuing a ruling that customer owned equipment could be interconnected to the nationwide telephone network if the equipment was not harmful to the network. The long-standing dual authority was challenged when a state commission filed a federal lawsuit to block the FCC from its efforts to institute competition by requiring telephone companies to interconnect with CPE provided by others. In what became known at the *Telerent* decision, the Fourth Circuit Court upheld the FCC's pro-competitive policy against attempts by state regulatory agencies to block interconnection. The court ruled that

[44] Manley R. Irwin, *The Telecommunication Industry: Integration Vs. Competition* (New York: Praeger, 1971), 49-51.
[45] Harry M. Trebing, *Common Carrier Regulation-The Silent Crisis*, 34 Law and Contemporary Problems, 322-323, 1969.
[46] Federal regulation by the Interstate Commerce Commission (ICC) began in 1910, while state regulation started in Wisconsin in 1907, Richard Gabel, "The Early Competitive Era in Telephone Communication, 1893-1920," *Law and Contemporary Problems* 34, 1969): 355-358.

the FCC, not the states, had jurisdiction over the telephone companies' interconnection policy.[47]

The *Telerent* ruling did not end the controversy over competition in the telephone equipment industry. The local telephone operating companies could still thwart competition by manipulating intrastate local and long distance telephone rates, which were beyond the reach of the FCC, in order to subsidize equipment prices and thus gain an advantage over their competitors. To ensure effective competition in the equipment industry, the FCC, and the state commissions were required to monitor subsidization.[48] Still, this ruling was a significant step in creating the interconnect industry and introducing competition within the telephone terminal equipment business. The regulated telephone companies had been requiring expensive interface devices for the privately provided equipment. With this ruling, the court affirmed FCC policy authority for enabling direct connection of equipment provided by non-telephone company entities to the telephone network. However, the FCC continued to require this equipment to meet safety and performance standards and be registered with the FCC.

Companies which manufactured terminal equipment persuasively argued they could reduce costs for customers. For example, a typical Bell Operating Company (BOC) monthly charge for an extension phone was $12 per year. Retail chain stores sold extensions for a one-time charge of $22. In a similar manner regarding transport, Pacific

[47] 537 F.2d 787 (4th Circuit Federal Court), Dec. 14, 1976.
[48] In this context, subsidization refers to the failure of a regulated firm to recover its long-run marginal costs on a particular service. This becomes a concern when profits from a regulated or non-competitive offering (i.e., local phone service) is used to reduce the pricing of an offering which is unregulated and competitive (i.e., CPE). If this subsidization is permitted the result is an unfair competitive advantage for the BOC.

Telephone charged 61 cents/minute for a regulated intrastate call from San Francisco to Palm Springs while an interstate call, open to competition, from San Francisco to Las Vegas of the same distance cost only 48 cents/minute.[49] This is analogous to the situation of intrastate versus interstate airplane flights before deregulation and open competition.

Concurrently with their legal battles and claims of adverse impacts on universal service, AT&T continued to expand the reach of their telephone system across the country. Funding requirements of expansion led to the need for unpopular rate increases while still leaving large pockets of market potential unsatisfied. Bell was often held up by potential competitors and by members of the populist movement as an example of a distant, impersonal corporation growing rich by maintaining a stranglehold on a popular and useful product and its related services. In contrast, Bell's management "had come to believe, and believe honestly, that anyone who attempted to enter the telephone field, no matter through what gate, was an interloper and a lawbreaker."[50]

With their near monopoly power, Bell was able to make huge profits. For example, they required that telephones connected to their network be made only by Western Electric which was a wholly owned subsidiary. Further, they also required the sets be leased rather than bought. Manufacturing a set cost only four dollars and the annual lease amount was twelve dollars. A substantial profit was assured. However, this profit did not prove sufficient to fund the need to continue to grow the networks reach. Few of the local exchanges were able to fund expansion without local service rate increases. This created

[49] Edgar Buttner, President of California Interconnect Association, *San Francisco Examiner*, April 15, 1976, 33-34.
[50] Paul A. Latzke, A Fight with an Octopus, (Telephone Press,1906).

continuing conflicts with the subscribers and citizen groups took these complaints to government officials.[51]

Throughout the deregulation debates, government regulators had struggled with the issues of competition versus regulation. The Deputy Chairman of the New York State Public Service Commission had this to say at a conference:

> ". . . as a general matter, the economy will prosper and the welfare of consumers will be advanced if business firms are afforded maximum latitude in competing with one another in seeking to satisfy the needs and desires of particular customers. The regulation of public utilities is seen as an exception to this general approach, an exception made necessary by the inevitably monopolistic character of major aspects of public utility operations."[52]

This comment goes right to the heart of the issue. The point of contention revolved around the nature of any exceptions to open competition. Most regulators agreed exceptions should be no broader than the conditions which made it necessary. The problem with telecommunications was deciding on the necessity; especially considering the changing nature of technology in that industry. Also, to the extent that some portions of a public utility operation may be conducted under competitive conditions, it was logical to remove those segments from the regulatory sphere in order to facilitate customer choice among competing firms. This viewpoint explains why it was considered appropriate to

[51] Mueller, 33-37.
[52] William K. Jones. Deputy Chairman, New York State Public Service Commission (Presentation at a Seminar of the International Communications Association, Phoenix, Ariz., January 25, 1973).

favor the liberalization of interconnection standards and seek to transition telecommunications terminal equipment from the regulated sector to the competitive sphere.

Telephone operating companies countered that the telephone network as it was then operated and regulated functioned satisfactorily, in most if not all aspects and any disruption of the present system was more likely to be harmful than beneficial. Further, the effectiveness of certification could not be proven because its use had not been permitted. Therefore, experimentation in limited areas, with respect to specific types of apparatus, was begun by the Federal Communications Commission, working in conjunction with state regulatory officials. The concentration was on standards for specific types of apparatus (such as PBX equipment). Specifically, the New York State Public Service Commission was one of the lead agencies which were instrumental in studying the feasibility of a liberalized form of interconnection in a limited geographical area. Regulatory bodies believed that such piecemeal moves were appropriate responses because both caution and experimentation were necessary.[53]

2.8 Essential Technical Standards

Regulatory concerns varied somewhat among the different governmental agencies, but an area of agreement was the need for care to be taken in the development of technical interface standards to preclude their use, intended or unintended, for anticompetitive

[53] AT&T had repeatedly argued there could be damage to network transmission and switching systems if equipment manufactured by suppliers not affiliated with the incumbent telephone companies was permitted to be introduced. Among the possible dangers could be erratic voltage generation on telephone lines, improper network control signaling, and poor service due to distortion of signals. Most State Commissions were concerned that the potential for damage was greater than the possible benefits. i.e. North Carolina Utilities Commission v. FCC, No. 76-1002 (4th Circuit, filed Jan. 2, 1976).

purposes. For example, AT&T sought standards which would ban the mixture of company-owned and customer-owned terminal equipment on the same telephone access line. The justification for this was to provide technical ease in testing for equipment defects. State regulators considered the justification to be insufficient to offset their concern that the telephone company may use the restriction to discriminate against customer owned equipment in order to favor their own equipment offerings. Eventually, a general agreement emerged among regulators that the telephone network should be protected from degradation resulting from the interconnection of poorly designed, manufactured, installed or maintained customer owned equipment. There was also agreement that, by using a standardized interface device, an acceptable level of protection could be achieved against most kinds of technical harm to the network and, in some circumstances at least, something other than an interface device could suffice.[54]

Even in light of developing regulatory consensus, AT&T had continued to argue its charge was to provide the best possible telephone service to the United States and to accomplish this required it to be the sole provider under government scrutiny. In a speech to the 1973 National Association of Regulatory Utilities Commission (NARUC) convention, the AT&T Chairman said, "The story of our unusual obligation of responsibility and service is being told forcefully and with conviction. But the acid test will be whether the public hears and accepts our arguments that it is their telecommunications service the Bell System is trying to protect."[55]

[54] William K. Jones. Deputy Chairman and Commissioner, New York State Public Service Commission, (Presentation at a Seminar of the International Communications Association, Phoenix, Ariz., January 25, 1973).
[55] John deButts, AT&T Chairman, (Presentation at NARUC convention, 1973).

The fundamental argument for a regulated telephone monopoly was well understood by deButts and his management team. It was based on the long-held concept of standardized and universally available telephone service along with the need for that service to be of high quality. This meant a reliable telephone network that covered all the United States, was technologically integrated and connected as many citizens as possible. The objective was to unify the country and span the realms of economic and social policy. In its most common terms, the concept also meant maintaining affordable local rates by means of rate averaging and cross-subsides. There was a natural fit between a telephone monopoly and universal service objectives. A monopoly simplified standardization and provided the basis for nationwide connectivity. It also made it easier to conform rates to social policy goals. Use of long-distance revenues to subsidize local service made access to basic telephony affordable to large numbers of citizens. That goal was mostly realized when AT&T divestiture occurred in 1984 because 92 percent of homes in the United States had telephones. However, by that time, extending universal service to the emerging national information infrastructure rose to the forefront.

CHAPTER 3. LOSING END-TO-END CONTROL

In this chapter, the technology and associated processes leading to competition in Customer Premises Equipment (CPE) are identified and their impacts evaluated. Prior to the appearance of these new potential providers of equipment to be located on the customer premises, the incumbent operators had complete control over all aspects of end-to-end telephone service. The first appearance of a non-telephone company component was a very simple inactive device. This movement constituted the first assault on the armor of what had been considered a comprehensive natural monopoly. While it was successfully rejected, other pieces of equipment with increasing degrees of complexity and, the telephone companies believed, increasing potential for interference appeared.

Subsequently, active CPE was allowed, but only if there was a protective interface supplied by the telephone company to protect the network. Later, even more complex business services CPE appeared and the interface device was also replaced by the competitor achieving quality approval by an independent source to certify the equipment was safe. A major challenge for the BOCs was to change their mindset to being customer-focused and skilled at marketing. This was a whole new world for the old entrenched monopoly.

3.1 Dialite Rejected

The earliest attempt at competition in CPE had occurred in 1952 in the form of a simple device attached to the dial mechanism of the telephone. The claim by the provider, Dialite, was that this plastic disc would illuminate the dial. But the real purpose was to carry an advertiser's name. In this simple case, it would seem there could be no viable

claims about harms to the quality of telephone service. To avoided setting a precedent Southwestern Bell Telephone Company, the involved Bell Operating Company (BOC), filed a lawsuit contending the device interfered with the operation of the dial and attempts by the customer to remove it could damage the telephone set. Dialite argued the telephone company violated the Sherman Antitrust Act. The Federal Court ruled there was no antitrust violation because there was a legal contractual arrangement between the BOCs and their customers and therefore they had the right to take necessary steps to accommodate the terms of the contract. Further, the court ruled there was potential for damage from the Dialite device and that firm must stop selling it to telephone customers.[56] This was a clear victory by the BOCs. But, it did not foreshadow future events, which they typically would lose.

3.2 Acoustic Coupling Accepted (Hush-A-Phone and Scrambler)

The beginning of more serious competition in CPE occurred in 1956 with the introduction of another non-telco device to be used on the customer premises. The Hush-A-Phone clipped onto the mouthpiece of a phone to enable private conversations. It was a minor attachment somewhat like a small megaphone. The intent was to shut out environmental noise, allowing the user to speak quietly yet still be heard by the party on the other end.

[56] Southwestern Bell v. Dialite Dial Co., US District Court, Oklahoma 102F. Supp. 872 (1951), *http://law.justia.com/cases/federal/district-courts/FSupp/102/872/1382564/* , accessed 6/20/2015.

Figure 1 - Advertisement for the Hush-A-Phone[57]

AT&T petitioned the FCC claiming the Hush-a-Phone mouthpiece could cause major failures in the phone system. While this was a seemingly ridiculous claim, the FCC did rule against Hush-A-Phone on the grounds that as a telecommunications product it violated the phone company's monopoly rights as a regulated utility and was damaging to its obligation to provide quality service. The FCC prohibited the use of the device. The Hush-A-Phone company went to the Court of Appeals and argued that its device would have no effect on the telephone system. Since there was no electrical connection, the court ruled, there were no standards issues to be resolved. The court's opinion stated, "To say that a telephone subscriber may produce the result in question by cupping his hand and

[57] http://arstechnica.com/tech-policy/2008/06/carterfone-40-years/, accessed 12/1/2016.

speaking into it, but may not do so by using a device which leaves his hand free to write or do whatever else he wishes, is neither just nor reasonable."[58]

On May 2, 1957, AT&T sent a policy letter to all BOCs instructing them to comply with the revised FCC order which was issued in response to the court ruling permitting the Hush-A-Phone and similar devices. By that time a new model had been developed. The BOCs were required to file the appropriate tariffs in each of their state jurisdictions. The AT&T letter stated, ". . . the new Hush-A-Phone model, designed to be used with a type 500 set, has been examined and will be permitted by the Voice Silencer provisions as well as the Hush-A-Phone models described in the record of the Federal Communication Commission and United States Court of Appeals proceedings."[59] It was a complete victory enabling the first set of devices to be legally attached to the terminal equipment owned and provided by the BOCs.

This case served to encourage other potential competitors. An interesting example is the "scrambler" which was made by Delcon Corporation of Palo Alto, California. It was a portable unit which was initially designed to preserve secrecy in telephone calls for businesses and law enforcement. Like the Hush-a-Phone there were no wired connections. It was only held against the telephone handset. It worked by transposing and distorting high, low, and middle frequencies to convert the speech into garbled noise. A matching unit on the other end of the conversation reversed the signals back into normal speech. Thus, it would prevent eavesdroppers from listening to private conversations. Residential

[58] Hush-A-Phone Corp. v. U.S., 99 U.S. App. D.C. 190, 193, 238 F. 2d 266, 269 (D.C. Cir., 1956).
[59] John J. Hanselman, (AT&T VP) to All General Commercial Managers of BOCs, May 2, 1957, Collection 2, Record Group 5, Box 15, Southwestern Bell Telephone Company, AT&T Archives and History Center, San Antonio, Texas.

customers also sought these devices to guard against potential eavesdroppers who might be on a shared party-line. Some residential customers were also concerned about their conversations being heard by wire tappers, or even telephone operators. A pair of scramblers sold for $219 when introduced in 1960.[60]

3.3 BOCs File Tariffs to Permit Only Acoustic Connections

Following a model provided by AT&T in 1961, the BOCs drafted and filed tariffs with their state regulatory commissions which used the following recommended AT&T wording: "No equipment, apparatus, circuit, or device not furnished by the telephone company shall be attached or connected with the facilities furnished by the telephone company, whether physically, by induction, or otherwise."[61] AT&T and the BOCs had previously agreed to accept acoustical coupling devices which merely focused sounds. These accepted devices did not have any direct connection either by physically tapping into wires or through induction generated by the wires. With these state filings, the BOCs sought to prevent any incursion in the form of physical connections to the telephone network transmission facilities. The hope was that state commissions would be more stringent in protecting their monopoly rights and thus influence the FCC to follow suit.

Although the voice recorder was only an acoustic connection, it did present an additional dilemma beyond interference with network signaling and transmission. At issue was whether the BOC's should be responsible for prohibiting the recording of conversations without the knowledge of all parties involved.[62] Voice recording devices for use on telephones had been available since World War I. Only after World War II,

[60] *Business Week*, September 24, 1960. Page 34.
[61] AT&T tariff no. 132 with the FCC paragraph 7, 1961.
[62] Ronald Hrusoff, Staff of FCC, *Public Utilities Fortnightly*, 5/12/1966.

however, did they become a serious matter. Technological advancements in recording equipment combined with increased growth of communications greatly increased their usage. Rather than address the issues, the BOCs opted to prohibit the use of such devices. The FCC acted by issuing a ruling, Use of Recording Devices, 11 FCC 1033. The FCC considered it an obligation to protect the public from unscrupulous recordings of telephone conversations. The first option explored was a device to notify the user that the conversation was being recorded. But, no technological solution could be found that would accomplish this. Instead, the FCC ordered the BOCs to amend their tariffs so that recording devices would only be permitted to be attached to the telephone if a warning device was also in use. For any customer to use a recorder, the telephone company was required to install a recorder connector which contained a recorder tone device that automatically produced a distinctive tone repeated at intervals of 15 seconds.

However, the tariff requiring a tone did not solve the problem. Customers were irritated by the sound. Due to the irritation factor, lack of awareness of the requirement, or because they were deceitful, many users recorded without the tone. Enforcement was very difficult. Multiple studies showed that many more recording devices were bought than the number of recording connectors with tone generators which were installed by the BOCs. Typically, the investigation was only undertaken because of a complaint. Most often little in the way of serious action resulted. Still, the volume of complaints received by the FCC continued to increase in the mid-60s.[63]

[63] Ibid.

Beyond the general usage of recorders, the Justice Department argued it was essential for police officers to be allowed to record telephone calls without the use of the tone.[64] While these debates were underway, it was unclear whether the BOCs were required to demand a written authorization before installing recording devices without warning tones. And, even if a BOC did obtain an authorization, it might be later determined that officials issuing the authorization were outside their degree of authority. The BOC doing the installation might then be exposed to a civil lawsuit. Even though the FCC had no rules regarding recording of telephone conversations, federal and many state laws did apply to the practice. Typically, conversations could not be recorded unless the use of a recording device was preceded by verbal or written consent of all parties to the telephone conversation, accompanied by an automatic tone warning device, which produced the distinct signal that was repeated at regular intervals during the telephone conversation, or a court order had been issued authorizing the recording. Also, no recording device could be used unless it was possible to physically connect to and disconnected from the telephone line or switched on and off.[65]

3.4 Carterfone Changes the Telephone Industry

Another initiative centered on the desire of Carter Electronics of Dallas to interconnect private mobile radio systems with the nationwide telephone network. The Carterfone was designed to be used with a two-way radio at the base station of a mobile radio system. When callers on the radio and on the telephone were both in contact with the base station operator, the handset of the operator's telephone was placed on a cradle in

[64] Nicholas Katzenbach, Deputy Attorney General, speech to third judicial circuit, 1963.
[65] https://www.fcc.gov/consumers/guides/recording-telephone-conversations, accessed12/5/2016.

the Carterfone device. A voice control circuit in the Carterfone automatically switched on the radio transmitter when the telephone caller was speaking; when he stopped speaking, the radio returned to a receiving condition. A separate speaker was attached to the Carterfone to allow the base station operator to monitor the conversation, adjust the voice volume, and hang up his telephone when the conversation had ended. The Carterfone device was invented by Thomas F. Carter of Dallas, Texas. It was produced and marketed by the Carter Electronics company beginning in 1959. A picture of this device is shown in Figure 2.

Figure 2 – The Original Carterfone.[66]

By 1966, approximately 3,500 Carterfones had been sold.[67] Concerned by the growth in the use of Carterfones, the BOCs notified their subscribers that the Carterfone,

[66] http://www.computerhistory.org/revolution/networking/19/371/2148, accessed 12/24/2016.
[67] FCC Docket 16942, Release Number: 68-661, June 26, 1968.

when used in conjunction with the subscriber's telephone, was a prohibited interconnecting device. The BOC's position was that unlike the Hush-A-Phone, which was now permitted, the Carterfone was an active device and did impact the network by switching on and off. Also, the Carterfone established, and continued throughout a conversation, an ongoing audio transmission over the telephone network while the Hush-A-Phone had only dealt with sounds before they entered the network or after they exited the network. Hence, there was no potential network impairment due to the Hush-A-Phone but impairment could be possible with a Carterfone if it did not operate within the necessary boundaries of volume and frequency set by the telephone company.

In rejecting the Carterfone, BOCs reasoned that since they had the responsibility to establish, operate and improve the telephone system, they must have absolute control over the quality, installation, and maintenance of all aspects of the system to effectively carry out that responsibility. The BOCs argued that if the installation of unauthorized equipment occurred, it would have at least two negative results. First, it would divide the responsibility for assuring that each part of the system could function effectively and, second, it would retard the development of the system since the independent equipment supplier would tend to resist changes which would render his equipment obsolete.[68] To challenge this position, Carter Electronics filed a private antitrust case in the Dallas District Court. The court ruled, in view of the complex technical nature of the subject, the matter should be referred to the FCC as they were better able to deal with the issues.

[68] This is an interesting argument for the BOCs to make because it was typical for the reverse argument to be made. Their challengers contended it was the BOCs who impeded new developments because they had the imbedded investment in equipment and facilities, which had long depreciation times, and thus were not inclined to pursue installation of new technologies.

The FCC found that there was a need for a device to connect the telephone landline system with mobile radio systems which could be met in part by the Carterfone. It also found the Carterfone had no material adverse effect upon the telephone system. Further, a tariff to prohibit the attachment of the Carterfone was unjust and unreasonable. It also found it would be unduly discriminatory since the telephone companies permit the use of their own interconnecting devices. The ruling referred to the decision in the DC Circuit Court in 1956, which had determined the Hush-A-Phone device did not adversely affect the telephone system. The FCC decided there was no material distinction between attachment of the Hush-A-Phone and the audio interconnection of the Carterfone. Further, the court had held in the Hush-A-Phone case that tariff prohibition of customer-supplied foreign attachments interfered with the telephone subscriber's right to reasonably use his telephone in ways that were privately beneficial without being publicly detrimental. The FCC conclusion was that a customer desiring to use an interconnecting device to improve the utility to him of both the telephone system and a private radio system should be able to do so, so long as the interconnection did not adversely affect the telephone company's operations or the telephone system's utility for others.[69]

3.5 CPE Interconnect with BOC-provided Interface Device

The Carterfone decision led to the creation of the CPE interconnect industry. This result occurred because the FCC determined that lifting the restriction for Carterfone alone would be unfair to others who wished to enter the business. Therefore, any company was permitted to provide terminal equipment so long as it was proven to not be hazardous or

[69] FCC Docket 16942, Release Number: 68-661, June 26, 1968.

detrimental to public telephone services. The BOCs were charged with establishing reasonable standards for these attachments. The FCC ruling also provided the basis for allowing future devices, such as computer terminals, to be connected to the telephone network.[70] The BOCs still managed a minor victory by convincing the FCC that "interface devices" designed and provided by the BOCs had to be installed between any non-telephone company equipment and the public telephone system. Following this ruling and to seek to establish a limit on future competition, the BOCs began to file state tariffs which did allow interconnection but also established that the connecting device provided by the company and used on the customer premises would limit the number of phone lines to ten phones.

The providers of alternative CPE contended that devices provided by the telephone companies were not necessary and that their own equipment could be "certified"[71] for direct connection to the network. In response, the FCC asked for comments on the viability of such a system of certification. A Joint Federal-State Board was created and charged to study the issue. AT&T enjoined its own study of terminal equipment provided by customers as compared to equipment provided by the telephone company.[72] AT&T reported that there were 30% more trouble reports on lines connected to telephone switches and 60% more trouble reports on private lines, which were direct connections from one premises of a customer to other premises without being switched in the telephone company office.

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[70] *Business Week*, August 19, 1967, 91. (The introduction of data CPE is explored in Chapter 5.)
[71] The suppliers of CPE contended all that should be required was inspection and approval by a licensed professional electrical engineer.
[72] AT&T, *A Competition Issue* publication, 3/4/1974.

At issue was whether interface devices tested and approved by the BOCs and AT&T could correct these faults, and if so, who would fund the testing process. Should it be the end-user customers, the equipment suppliers, or the telephone companies? As a regulated utility, the local telephone companies set intrastate rates so that the price of optional services, such as extension sets or more elaborate equipment, were set at sufficiently high levels to help keep the rates for basic service low. These basic rates were averaged across a state and not linked to the cost of providing a particular individual line. The goal was to make basic service affordable for more users and thereby increase the value of the overall service.

3.6 Competition Grows in Business CPE

In the 1970s, progress was being made by competitors in the sales and maintenance of PBX switches and phones to businesses. The BOCs concerns arose from the same fears as in the consumer market that the network would be harmed without solid testing and equipment approval processes, and that the lost revenue would mean higher network service rates to the business customers since PBX equipment subsidized their network services. For the year 1973, the BOC operating in California claimed to have lost 950 PBXs to competitors resulting in $10 million of annual revenue.[73]

In 1974, there were four PBX certification proposals before the FCC:

[73] Pacific Telephone Public Relations Department documentation of an AT&T public briefing regarding certification, Record Group 5, Box 7, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas. June 4, 1974.

1. From the PBX advisory committee: Customer provided PBX equipment could have a direct electrical connection to the network, but the equipment itself must be tested and approved at a laboratory authorized by the FCC.
2. Also from the same committee as above, but only on an interim basis: The customer could provide the connecting arrangement so long as it was approved by a newly created 20-member subcommittee composed of representatives from the FCC, the local PUC, independent manufacturers and the Bell System. (Note: this is an incredible example of a bureaucratic nightmare unlikely to ever be workable.)
3. From the FCC, Chief Engineer's office: Direct connection of CPE would be permitted if the manufacturer had petitioned the FCC and successfully passed tests proving that it met the necessary standards. After approval, it would be left to the state PUCs to enforce standards of maintenance. The incumbent local telephone service providers were very concerned about the length of time required to successfully prove harm was occurring and have the terminal equipment corrected or removed.
4. Commissioners from the National Association of Regulatory Utilities also proposed a direct connection with approval by the FCC. A newly created joint federal/state body would be responsible for implementation and ongoing administration. The local phone company would be required to conduct ongoing inspections of competitor installations. It would seem untenable to charge a company with inspecting and requiring corrections be made to the equipment of its competitors.

None of these options were considered acceptable by AT&T. Its argument was that manufacturers would only be interested in profit margins and would find ways to circumvent the intent of the standards. The company continued to take the position that any of the above options would lead to chaos on the network, poorer service and increased overall costs to the end user customer. The unstated implication was that by contrast, AT&T had always and would continue to focus on the best cost/service balance for the customer. Of course, they could do so since they were rate-of-return regulated and not price regulated. Rate-of-return regulation often did examine conditions and authorize price increases. But, rather than reducing or at least stabilizing prices, AT&T contended that multiple suppliers inevitably would lead to price increases regardless of whether it came from them or from their competitors.[74] Involvement by independent telephone companies ranged from substantial activity in opposition to competitors by the larger independents, such as General Telephone and Continental, to non-involvement by small operators who had few business clienteles in their regions. Supporters were mostly groups created by the competitors to AT&T. Examples are the North American Telephone Association and the Business Equipment Manufacturers Association. In addition, there were groups of communications representatives from larger firms which entered the discussion. Notable examples are IBM and 3M. These firms and many like them were convinced that facilitating competition would yield improvement in cost and performance for their operations.

[74] The National Academy of Sciences did come out with the statement that it was technically possible to achieve protection through certification, but they did not deal with the economics of the approach.

3.7 Service Quality and Ineffective Regulation Debated

No doubt it would be possible for other manufacturers to create CPE which was equal in quality to what AT&T provided. However, the argument by AT&T went beyond just the equipment itself to issues of end-to-end service responsibility and the requirements for proper installation, maintenance, and repair. AT&T claimed that a study they conducted for 18 months in 1972 and 1973 of about 400 telecommunications lines with a mix of customer owned terminals and AT&T owned terminals demonstrated that almost four times as many of the customer owned terminals had a higher percentage of trouble conditions. The problems consisted of noise, wrong numbers, billing errors and even physical damage to AT&T equipment from hazardous voltage levels. The chairman of AT&T personally took on delivering the message through statements such as, "No system of certification we can envision and no interface requirement can provide a fully adequate alternative to the unequivocal and undivided responsibility for service that the common carrier principle assures."[75]

At the other end of the competitive spectrum was Rolm Corporation. They began efforts to compete with the operating companies in 1973 by developing intelligent systems for large businesses designed to replace the switchboard and desk phones usually leased from the operating company. At that time, Rolm was a small manufacturer of military computing devices with operating revenue of about $3 million. By contrast, AT&T had operating revenues of $24 billion.[76] Rolm's target customers were businesses such as corporate offices, hospitals, and hotels which had up to 4,000 telephone sets linked to an

[75] John deButts, speech at National Association of Regulatory Commissions annual meeting, September, 1973.
[76] AT&T Annual Report, 1973.

in-office switchboard. Since the Rolm equipment was electronic rather than mechanical, as telephone companies still used, it was less expensive, could provide more features (such as caller ID and least cost routing of outgoing calls) and required less personnel to operate.

The different levels of sophistication in terminal equipment made it difficult and costly for regulators to have the staff, test equipment and processes necessary to handle the complexities involved in certification. This issue also highlights a major challenge confronted in the emerging environment of competition: the multi-level aspect of regulatory authority. Among federal, state and local agencies there were sometimes over-lapping and other times unaddressed responsibilities as well as disagreements about the appropriateness of actions. For example, some state commissioners had their doubts about the wisdom of certification. A member of the New York Public Service Commission stated, "It is not clear to me how the people of this nation will benefit by substituting a new bureaucratic regime, at both the national and state levels, for an effective interface device." [77] He lamented that the costs would be millions of tax dollars to save a minor expense for a few individuals and suppliers who wanted to compete with the telephone companies. The costs to government would largely be in the form of policing inspections and compliance.

Similarly, Ben Wiggins, President of the National Association of Regulatory Utility Commissions (NARUC), charged that regulators and others at the federal level were seeking to turn back the clock to the 1890s and early 1900s when the expiration of the original Bell patents led to widespread and chaotic competition among local telephone companies. He contended that a pricing policy founded on looking out for the little guy

[77] Edward P. Larkin, comments at proceedings of New York State Commission, 1974.

was the intrinsic social justification for monopoly operations. Regulated monopolies could accomplish greater efficiency thereby leading to lower unit costs.[78] This view is a bit strange considering the reality was a widespread celebration among "little guys" when telephone patents held by Bell expired because the resulting "chaos" of competition led to more affordable options.

Cyrus J. Colter, former commissioner of the Illinois Commerce Commission stated the following in his testimony before a Senate Committee:

> At present, the state regulator is able to design rates in a way that the charge for the basic services — i.e. for the use of his telephone by the average householder — is held low, while other charges, such as for terminal facilities, extensions, PBX's, etc. are kept higher. Also, residential rates are invariably kept lower than business rates. These rate policies are not new, but historical and have served the nation well. But now these new, and I can only call them selfish, interests have appeared with the clear intention of underpricing in those special areas in which regulators have heretofore kept the prices higher: kept them higher in order to provide lower, though reasonable, charges for the great body of household telephone users across the country. Such competition may be good for these special interest entities which are not at all averse to competing with a regulated system. But it is not good, in my opinion, for the American public, especially the part of it which is economically disadvantaged — the unfortunate. It ties the regulator's hands as he attempts to set rates which will meet over-all public interest standards — and especially the needs of the poor, the elderly, and the ill.[79]

[78] Ben T. Wiggins, President NARUC, testimony at Senate Hearings, 1974.
[79] Statement of Cyrus J. Colter, Former Commissioner – Illinois Commerce Commission, "Hearing on The Industrial Reorganization Act, Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary United States Senate 93rd Congress," July 9, 1974, https://archive.org/stream/industrialreorga05unit/industrialreorga05unit_djvu.txt, accessed 6/15/2015.

Some federal officials also voiced concerns about going too far in opening the system. One FCC Commissioner expressed the belief that while competition was important, there still needed to be a balance between the forces of competition and the guiding hand of regulation. He used the Carterfone decision as an example and mentioned how CPE in the growing field of data processing may require careful scrutiny to guard against unfair competition while also ensuring the continued viability of the national communications infrastructure. He concluded that the FCC should turn to regulation only as a necessary supplement if the free competition was either not present or did not produce satisfactory results.[80] Similarly, The Chief of the FCC's Common Carrier Bureau noted that the FCC in the Carterfone decision had rejected the use of customer supplied equipment to perform signaling on the telephone network. A panel of experts from the National Academy of Sciences (NAS) was assembled to examine the issue in detail. After this event, the panel's conclusions were sent to the Chief of the FCC Common Carrier Bureau, Benard Strassburg. The panel's foremost conclusion was, "Uncontrolled interconnection can cause harm to personnel, network performance, and property."[81] Strassburg then took the position that the telephone industry should carefully assess recommendations of the NAS panel and act to ensure that the public interest was protected.[82] Considering statements such as this, it is clear regulators believed careful consideration and deliberation was warranted.

[80] Kenneth Cox, "Address to the Antirust Section of the American Bar Association," April 1970. (At the time FCC Docket 16979 was ongoing. The subject was the interdependence of computer and communications services.)
[81] Lewis S. Billig, Chairman NAS Special Panel on Common Carrier/Interconnections, in letter to Antony G. Oettinger, Chairman NAS Computer Science and Engineering Board, Harvard University, April 1970.
[82] Benard Strassburg, Chief of FCC Common Carrier Bureau, "Interconnection in 70s," Address to the North Carolina Telephone Association, April 1970.

Even though the FCC studied the issues and released opinions on CPE competition matters, their position as a federal agency precluded authority over intrastate phone rates. Thus, they were not empowered to unilaterally take actions to prevent unfair competition in the terminal equipment market. Instead, the FCC sought to establish joint federal-state boards to evaluate relationships between costs and pricing of services and CPE. The preferred method recommended by economists was to calculate the proper cost of an offering by taking a long-term view of how much it varied as volumes increased. The BOCs were enabled to participate in the competitive CPE business without the burden of recouping overhead costs from its established monopoly business. More importantly, by segregating the costs of the competitive arena it meant that the regulated monopoly telephone entity would not be able to assume any costs to the advantage of the competitive part of their operations. It seemed to be the fairest approach. However, the collection of data and enforcement was an extremely complex process and typically proved to be beyond the ability of regulators to administer.

3.8 Competition Means Focus on Sales

The BOCs conducted training of their sales managers to make sure they were familiar with the details of what equipment competitors were offering. In June 1970, Southern New England Telephone reported there were 30 different devices available to customers to enable them to connect their own equipment to the telephone network. They desired that their sales force understand how their equipment compared to what competitors offered. There was direct competition in more than 300 cases. It came from companies with a long history in communications, such as International Telephone and Telegraph (IT&T) and Radio Corporation of America (RCA), as well as newer entrants in

the United States communications market, such as Hitachi and Royce Instruments. Southern New England's success record was good. In the PBX field, they had lost only 5 out of 75 sales. One big loss was the switchboard for Armstrong Rubber Company headquarters in New Haven. Royce Instruments proposed Ericson equipment, which was very similar to the telephone company equipment. Armstrong Rubber decided to go with Ericson. They preferred the flexibility of being able to lease and have the option to buy.[83]

Some key executives in the BOCs realized competition in CPE was inevitable and attempted to recognize and adjust to it. In 1970, William Ellinghaus, President of New York Telephone said:

> Since the mid-sixties, there has been increasing discussion of the role of competition in providing communication services. A number of regulatory decisions have been addressed to this point, including the Carterfone decision. That case led to a liberalization of our tariffs that permit more interconnection of customer-provided communications devices and the sharing of our facilities among customers. We think these changes are good because they stimulate the use of the nationwide telecommunications network while at the same time provide more options to our customers and more business for the manufacturers of communications terminal equipment. It should be recognized, however, that these tariff modifications came about after careful examination and consideration of the merits of the changes by all interested parties.[84]

An FCC Commissioner and powerful critic of the Bell Companies viewed the statement by Ellinghaus as an exception. He charged that most Bell officials were afraid

[83] *Southern New England Telephone Times*, 6/30/70.
[84] William Ellinghaus, President New York Telephone, *Public Utilities Fortnightly* (October 1970), 23-24.

of anything, not their own, being installed into the telephone system. He compared it to an electric company trying to discourage installation of air conditioners and washer-dryer combinations. He went on to contend that if the telephone company would encourage the use of its system by innovative equipment manufacturers, it would suddenly find 200 million Americans working for Bell on their own time, rather than working against it. Communications traffic would increase enormously because 200 million people can think of a lot more things to do with a communications network than one company could.[85] In essence, he agreed on the merits of competing terminals but disagreed on the degree of receptiveness of the Bell companies.

In order to add weight to their arguments and clarify positions on the issues surrounding competition in telecommunications, the Bell System employed three highly regarded economists to write a paper on the subject. It would be shared with the FCC and the public. One of the authors was Alfred Kahn, an extremely influential person who later would become the chief inflation fighter and champion of deregulation for Jimmy Carter.[86] The other two were highly regarded economics professors and authors, William Baumol and Otto Eckstein. Eckstein was formerly a member of Lyndon Johnson's Council of Economic Advisers. In this paper, the authors noted that changes in regulatory policies were driven by trends in technology and in the demography[87] of the United States that

[85] Nicolas Johnson, FCC Commissioner, *Time Magazine*, November 2, 1970, p 80.
[86] It is ironic that AT&T chose Alfred Kahn since his later role under Jimmy Carter was significant in leading to settlement of the antitrust case which broke apart the Bell System.
[87] In particular, the change from a rural to an urban society.

made it appropriate to evolve from the traditional regulated monopoly structure in the telecommunications industry.[88] Among these trends were:

1. Diffusion of technological expertize to more business organizations, partially due to government support for research and development.

2. Increased sophistication of users with changing needs for their connectivity.

3. Increased use of communications networks internal to a business.

4. Concentration of population growth and economic activity in large urban areas and reduction of population in remote areas.

The authors referenced experiences with other regulated industries to guide the evolving public policy in communications. In these other industries, competition had created more centers of power and avoided the risk of excessive concentration. When a larger number of firms competed in a market, a greater services variety was likely to be offered. Customers had also benefited because pressures for rapid innovation yielded maximum product quality at minimum cost. A valid counter-argument, which the study emphasized, was that in telecommunications an additional benefit of a regulated monopoly structure had historically been the ability to invest heavily in basic research through Bell Labs. If the benefits of research are defused among several firms, the funding is likely to

[88] This is one example where the conclusions of a study supported a central thesis of this dissertation. It recognized that technology trends were leading the telecommunications industry toward an evolution away from the traditional monopoly of the BOCs. It is a surprising result considering it was funded by AT&T. One can only surmise that it was not what AT&T expected.

be reduced because sponsorship without certainty of payoff is not something multiple smaller firms would be inclined to undertake.

Another potential downside of deregulation could be a loss of economies of scale due to the greater variety of products, thus potentially leading to higher prices. Also, inexperienced buyers might be unable to identify the quality of competing offers, and sellers might be tempted to offer false bargains (inferior products at lower prices) leading to eventual quality deterioration. A major concern in telecommunications resulted from the interdependence of competing services where, for example, terminal equipment of one supplier must interact with the network and may cause interference, which might lead to an accumulation of detrimental effects on their service as well as the service of others. When loss of economies of scale and potential deterioration in overall service to the market combine to exceed the benefits of competition, it is preferable that the industry is considered a natural monopoly and subject to governmental regulation.

Clearly, there were many aspects, often conflicting, which had to be considered. Since AT&T initiated and paid for this study, it was not surprising the authors' conclusion supported AT&T's position that opening the way for competition must only be in limited areas and it must be structured to enable the monopoly provider to compete. Even so, the authors did go farther than AT&T expected by emphasizing the importance of no cross-subsidies between regulated and non-regulated offerings. This was a reversal from the long-held tradition of using earnings derived from more profitable areas of the telephone business to maintain low pricing of other services. The classic example was using profits from CPE to achieve wide availability of local service, including service in costly remote

rural areas.[89] Some leaders in the BOCs began to see there was no option but to accept that using CPE to subsidize local service would be stopped.[90]

An example of the new world forced upon the BOCs came from the Dallas area of Southwestern Bell. Prior to competition, telephone personnel were "order takers" and there were no "sales people" in any department. Faced with declining revenue from CPE due to competition, the General Manager over the Dallas region issued a challenge. He proclaimed that for every telephone extension the personnel charged with installation and ongoing maintenance of equipment and services (Operations Department) would sell, the newly formed marketing and sales organization (Commercial Department) should sell two. The Dallas Commercial Department used an "Eat Crow" theme and put up posters showing crow feet. Each foot represented a day and the daily sales numbers for individuals were recorded on every foot that went up. The Operations Department did a less involved type of record keeping. Then, the General Manager granted awards to the individuals who met their assigned goals. For Commercial Department people, it was a dinner for two and for Operations Department personnel it was a Thanksgiving Day turkey. The whole plan worked extremely well and total selling goals were exceeded by a large margin. Somewhat surprising was that Operations did better than Commercial. This unusual activity for a telephone company was repeated often in Southwestern Bell Telephone and copied by the other BOCs. It signified a major change of culture.[91]

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[89] William Baumol, Otto Eckstein and Alfred Kahn, *Competition and Monopoly in Telecommunications Services*, 1-6, 13, 11/23/1970.
[90] See comments of William Ellinghaus, President of New York Telephone on page 16.
[91] *Management Newsletter*, September 1971, Collection 2, Record Group 5, Box 15, Southwestern Bell Telephone Company, AT&T Archives and History Center, San Antonio, Texas.

3.9 The Bright Future for Communications

In the 1970s, customers had a growing enthusiasm for the future of communications. Perhaps the new world of the Information Age would include worldwide computer networks, a cashless-checkless economy, video phones, and commuting-free workers. IBM, Xerox, GE, RCA and many other suppliers of technology began to explore the opportunities as players in communications terminal equipment. Interconnection to the telephone network of non-Bell devices such as telephone sets, switchboards, PBXs and data terminals progressed significantly. Most of this activity was for businesses and, even there, the BOCs continued to own 80% of the equipment. While the remaining 20% may not seem a major problem, the BOCs were still concerned about losing 20% of the base for establishing its allowable "Rate of Return" under the regulatory processes, which used embedded investment as the basis for how much each BOC could earn and hence what prices they could charge. AT&T's head of market planning, Samuel Bonsack, stated the company fully intended to compete. As an example, they had rushed to completion a new line of PBX equipment. BOCs were also experimenting with new pricing alternatives such as offering a lower installation charge with higher month rental if that better suited a business customer's needs. Stepping up to face competition had not been part of the telephone business since the early 1900s when there were multiple competing local phone companies.

In addition to large suppliers in the business market, a growing number of small start-up firms also began to appear. These firms attempted to convince customers that their value proposition was not only to provide better equipment than the BOCs or other large suppliers, but also to offer faster service response. One such company was founded by an

ex-Bell salesman. Even though it was only local to Greenwich, Connecticut and had just 12 employees, it took the optimistic name of National Communication Industries Company. The owner, Louis Ferraro, claimed his company would achieve one million dollars of revenue in 1971. They bought equipment from manufacturers which they then installed and serviced. On the other end of the size spectrum were large companies such as International Telephone and Telegraph (ITT), United Business Communications, and North American Phillips Corporation. These companies manufactured their own equipment, which they installed and serviced. The director of marketing for ITT Communications Equipment commented that most businesses were surprised at what his company had to offer. Initially, a business customer simply wanted telephones like the ones the BOCs offered and his company was required to compete only on the price. By the early 70s, PBX customers were advancing in their sophistication and began to be interested in capabilities the BOCs did not offer. Some were very simple such as music on hold or a light beep tone instead of the somewhat irritating busy signal. Another was the automatic transfer of an incoming call to a station where the customer representative was not busy. This helped businesses to avoid losing a potential customer. Other attractive features were the ability to set up conference calls with a simple push of a button, abbreviated dialing for frequently called numbers, and priority overrides so that an executive or an incoming urgent call could break into busy lines.[92]

By the end of 1971, the largest success was by Arcata. This firm grew out of the cable TV business and bought up small CPE providers with the ambition to become

[92] *Business Week*, November 6, 1971, 66-74.

nationwide. Arcata sought to be first with new innovations such as a microphone and speaker in the base of a set that could be used for normal calls or for dictation to an assistant. In 18 months they had achieved a presence in 27 cities and had completed 1000 installations.

Competition in the consumer market grew slower than in the business market. However, the stakes were larger in the consumer market because there were so many phones in residences. Although the FCC pushed for competition in the business market the commission was slow to do likewise for home phones and ancillary equipment. Also, the BOCs charged rather high fees to allow a phone of another provider to be connected and even added additional charges for a dial to be installed in what was called a "decorator" phone which a customer had purchased. Basically, only a few things had changed since the advent of the first dialed service in 1919 and then the beginning of "touchtone" service in 1963. Color options were added but the ring still sounded the same.

Decorator phones aimed at the residential market are shown in Figure 3. There were simple devices to replace telephone sets provided by the BOCs with a set that some individuals found more attractive. They could be purchased through stores and used as decorative pieces. The following ad claimed the devices were "registered" and therefore compatible with the network.[93]

[93] The FCC reported in 1976 that the telephone operating companies had not proven that there had been any economic harm nor any technical/physical harm to the network from customer provided equipment. FCC Press Release, May 3, 1976.

Figure 3 – Advertisement for non-Bell decorator phones.[94]

When faced with growing penetration of voice terminals provided by competitors in the residential market, the BOCs began to provide their own variety of "decorator" phones. It was a recognition that consumers wanted more variety than only a few options in their type of phone. They wanted something different than what their neighbor had. It was true that telephones had been rather like the Model T Ford. The telephone companies, like Henry Ford, considered simple mass products to be more cost effective and reliable. You could have any color you wanted as long as it was black. Recognizing the need to offer more, the BOCs begin to sell different colors and styles, even including a "Mickey Mouse Phone" under license from Disney.

[94] *Hayward Daily Review*, (California), May 10, 1977.

The AT&T Vice President over service planning, Samuel Bonsack, in a speech at a meeting of 250 representatives of communications users, consultants, and suppliers, stated that the BOCs would have to change their method of setting installation and monthly line use charges. Given the competition in CPE, it no longer worked to spread these service charges over all users. Some customers with CPE not provided by their BOC would now have to pay more for their network services. This was because prior to competition in CPE, the equipment at the premises was factored into the overall services price at a rate higher than the cost to the BOC which provided it. This was the traditional means to keep the overall network service charges lower for areas which cost more to serve. While acknowledging that competition may bring benefits to some business users regarding flexibility and overall cost, it also meant new challenges for them. The following quote from Bonsack captures well the essence of the Bell Companies' view: "The designers of your communications systems, for example, are going to have to take many more things into consideration. What is the best piece of equipment or system to use in each situation? Is it compatible with other systems? Do certain cost savings outweigh, let us say, flexibility or performance? How well can a supplier provide the maintenance service you require? Are you investing dollars in the ownership of a system that will be obsolete in a few years?"[95] His goal was to sow doubts and fears in the minds of decision-makers who were responsible for selecting suppliers. He emphasized these types of issues had been and could continue to be dealt with most efficiently by the BOCs. Ironically, this "fear-mongering" tone sounded like the argument used by one the BOCs new competitors, which

[95] Samuel E. Bonsack, speech at Auerbach Conference quoted in: *Telephony Magazine*, October, 18, 1971, 47.

for years had dominated the computer industry. As the saying went, "No one ever got fired for buying IBM."

3.10 Slowing the Impacts of Competition

By 1974, the attention of both the federal policymakers in Washington and the public, in general, was focused on the chaos created by Watergate and the long lines at the gas pumps due to the energy crises. In comparison, telecommunications issues seemed to be of a minor importance partly because the topic was not one of fixing something broken, but rather how to make it even better. Further, no agency was in worse organizational shape than the FCC. In addition to being short of staff, the FCC'S integrity was questioned because of the release of White House memos indicating a strategy to use them to pressure news broadcasters to be more favorable toward the Nixon administration. Also, there were supposed to be seven commissioners, but due to term expirations and resignations, there would be only three remaining. In addition to being focused elsewhere, Congress was also suspicious of any candidates that were put forward by Nixon's staff. Under these conditions, the FCC was unable to effectively deal with the critical decisions facing the telecommunications industry, specifically the questions surrounding regulation and competition.

The Bell System saw in this quagmire an opportunity to attack. AT&T had always considered attempts to duplicate its capabilities with competitive alternatives as anathema. FCC decisions since 1968 to allow interconnecting customer-owned equipment to the sacred network were considered horrible mistakes not only for their company but for the country as well. The Chairman of AT&T claimed publicly that competition endangered

the nation's phone system and the company would attack the policy-makers who permitted competition.[96] Competitors continued to chip away, albeit slowly, at the CPE equipment rental revenues of the BOCs.

While attacking policy-makers, AT&T also sought some means to attack competitors. It made a remarkable move in 1973 by hiring a top executive from outside of the Bell family. AT&T was a company that held to the practice of promoting from within, especially when it came to top officers. The man hired was Archie McGill, formerly a Vice President of IBM with responsibility for sales. McGill joined IBM in 1956 and at the age of 33, he was named a vice president, the youngest ever appointed at that corporation. In 1969, he had left IBM to start his own telecommunications consulting firm. McGill brought a very different style to AT&T. His charge was to establish a more aggressive sales mindset throughout the BOCs and to enhance the product line available to them from their AT&T-owned supplier, Western Electric. His tenure at AT&T lasted ten years. Many longer-term employees, including executives, found him difficult to accept. McGill's parting remarks hint that he also found the regulated, complex structure of the Bell System to be a difficult environment. McGill's observation was remarkable but rather accurate. He said AT&T was ". . . in some turmoil as it tries to get on its feet." He also noted, "Any kind of major transition requires extra adaptation, a willingness to change, restructuring, new systems, new attitudes and new cultures. It's a continuing process. You don't get through it in a day or a year." Those observations were certainly true.[97]

[96] *Business Week*, January 12, 1974, 16.
[97] *The New York Times*, Business Day Section, June 10, 1983.

Meanwhile, rather than recognize customer desires for a greater variety of options provided by multiple suppliers and seek to accommodate it, Bell carried on the same fight to make any competitive options difficult and more expensive for customers. After the 1968 FCC decision permitting connection of customer owned equipment, the BOCs had held firm to the need for a telephone company provided interface device to prevent harm to the network. Bell customers periodically received inserts in their monthly bill warning that equipment from other suppliers, such as telephones or answering machines, should not be installed without notifying their BOC. There would then be a $5 per month charge for an interconnection device which was supplied by Bell. Several of the state regulatory commissions had countered by initiating reviews of the need for these BOC-provided interconnection devices. Users and manufacturers contended such devices were redundant if the capability was already built into the customer-owned equipment.

3.11 Certification of CPE as an Alternative to Requiring an Interface Device

In 1973, the California Public Utilities Commission was one of the first to endorse a certification approach instead of the requirement for an interconnection device. This approach would require the non-BOC equipment to be tested by an independent lab and approved by a responsible state or federal regulatory authority. Pacific Bell countered that the impact would downgrade the quality and reliability of phone service. Wrong numbers and poor transmission could be expected. Costs would increase and cause the price of local service to the customer to increase. It was projected to cost at least $15 million in a five-

year period for a certification program for PBX systems in California.[98] No explanation or justification for this claim was provided.

AT&T argued that the issue was the need to control design and manufacturing standards, as well as installation and maintenance processes. They contended this was the only way to achieve quality reliability and performance. What they claimed to believe in was the essential need for end-to-end service responsibility. Further, they contended there were very few complaints to Public Utilities Commissions (PUCs) or to company management regarding their programs of inspection and enforcement for foreign attachments. Hence, they believed their employees were doing a good job and one which customers appreciated. However, it is likely that a key unstated concern of AT&T prompting their opposition to certification was that it would mean Western Electric would be faced with greater competition in CPE.

Consumer advocates, such as Ralph Nader, were inclined to look favorably on the prospect of competition. However, unlike some of the PUCs with their high level of concern for public welfare, consumer advocate groups were generally uncertain about the need for certification to provide protection of the network and its users. Another voice in the debate was the Non-Bell operating telephone companies, especially the larger ones with more to lose. They strongly supported the need for certification to prevent network harms. Foremost among these larger companies were General Telephone, Continental, and Alltel. These three were leaders in the United States Independent Telephone Association (USITA). There were many other smaller companies in USITA. Typically, the small

[98] Pacific Bell, "Background for Briefing," April 3, 1974, Collection 3, Record Group 5, Box 7, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas.

companies served rural areas and did not have significant concerns about competition since their operations were not attractive to new entrants because revenues and profits were small. USITA still represented all independents and presented cases to regulating authorities contending that local exchange rates would have to be increased due to loss of revenue from the leasing of terminal equipment.

There were four pathways through which government could impact the rules regarding certification: the state utility commissions, the FCC, the courts, and Congress. Initially, the state commissions could hear grievances and issue changes to the rules and regulations. The FCC could take pre-emptive actions whenever it was deemed necessary to achieve nationwide conformity. Then, through the appeal process, the courts could hear arguments and mandate changes be made to comply with their interpretation of the relevant laws. Finally, Congress could create legislation to resolve issues through making changes in the laws.

3.12 Two Pillars to the BOCs Argument

Throughout these processes, the Bell Companies continued to build their arguments on two pillars. The first was that if the BOC is regulated, then, in all fairness, their competitors should be also. The second, and they contended the most basic, was that the system worked very well as it was and any competition was not in the public interest. Groups that did not agree on these points were mostly ones that were created or enhanced by changes in the rules leading to more open competition. The most prominent were interconnection associations or organizations of equipment manufacturers other than Western Electric.

The BOCs continued to assert forcefully that as Customer Provided Equipment proliferated, the harms to the network and to service for other customers grew. Employees were informed concerning arguments to be made and strongly urged to communicate these points to the public, both formally and informally. Briefing sessions were held to educate employees on the issues and position of the BOCs. Attendance was mandatory at these briefings, as indicated by this statement of S. G. Worthington in a policy letter from 1974, "A Certification, Interconnection, Competition Region Briefing will be held April 11th in Room 1123, 666 Folsom Street from 9:00 until 11:00 a.m. All management and non-management employees who have not previously received a briefing on this subject should attend. Attached are copies of advance reading material to be completed prior to the meeting."[99]

At that time Worthington was the head of Public Relations for Pacific Telephone Company. Pacific and the other operating telephone companies felt proclamations and warnings from the AT&T corporate headquarters in New York would not mean as much to the average citizen in their territory as hearing it from a local manager or neighbor. In 1974, the Bell System had a million employees which made this strategy a formidable force. The local operating companies, such as Pacific Telephone, were well positioned close to the customer and able to seize on the opportunity to promulgate the messages. The mandatory requirement that all employees must attend is indicative of the importance the BOCs placed on this matter.

[99] Pacific Bell, "Our Position in California," April 3, 1974, Collection 3, Record Group 5, Box 7, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas.

The impacts of enabling CPE competition did cause concerns at many state regulatory agencies. It is an interesting twist that these concerns about impacts on small business and residential telecommunications users would arise from efforts toward opening competition against the very large and powerful Bell System. Since the early days of their existence, AT&T and the BOCs had continuously used their influence and resources to promote the case that one regulated telephone company was the best option to ensure universal service at affordable rates for all customers. Richard John in his book *Network Nation*[100] describes how, around 1900, while facing AT&T's domination of the telecommunications market, competition in the telephone business was still considered by customers and governmental regulatory agencies to be a plausible alternative to regulation. But after 1907, events such as the collapse of the United States Independent Telephone Company in New York led state commissions to undertake regulatory control of telecommunications. Further, with the support of Presidents Theodore Roosevelt and William Howard Taft, federal authorities also assumed regulatory jurisdiction.

But, in the early 1970s, a reversal was underway from the turn-of-the-century movement toward regulation. The FCC was beginning to favor allowing competition. However, at the state level, the National Association of Regulatory Utility Commissioners (NARUC) was sensitive to public opinion and issued a resolution which urged state agencies to, ". . . immediately institute an investigation to determine as soon as practical the present magnitude of the creeping economic impact on small users which is arising from the liberalized interconnection concept of the FCC . . ." This was in reference to the

[100] Richard R. John, *Network Nation: Inventing American Telecommunications* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2010), 340-341.

1968 Carterfone Decision of the FCC.[101] The President of NARUC went even further in his closing comments at the regulatory convention, "The time has come, unquestionably, to call a screeching halt to further proliferation of government-sanctioned diversion of telephone company revenues into entrepreneurial pockets, while we explore in depth what is happening to the 'little guy' without his knowing it."[102] Contrary to NARUC's position, the door to increased terminal equipment competition continued to open even wider.

It was clear that after the FCC permitted competition for communications terminals, new players focused on the enterprise[103] market and aggressively marketed customer-owned systems for businesses.[104] Although some managers in the BOCs, who faced the business customers daily, believed it was important to recognize and respond to specific marketplace desires, the Bell System policy makers held the reins tight. Their mindset was still one of "owning the user" and being the only game in town. Customer-facing managers in the BOCs were not willing or able to challenge that ultimate authority. One reason is that by comparison the threat was still not perceived to be great at the higher levels within AT&T. In 1974, the revenue of equipment competitors was $200 million and the total equipment rental revenue of the BOCs was $4 billion or one-sixth of AT&T's total revenue

3.15 Scare Tactics to Oppose Certification

Regulators at the state and federal level held discussions centered on the advisability of permitting customer-owned premises equipment so long as it was certified as meeting the specifications deemed necessary to prevent harms to the telephone network.

[101] National Association of Regulatory Utility Commissioners, "Eighty-Fifth Annual Convention resolutions," 1973.
[102] Ben T. Wiggins, Closing Address by NARUC President, Seattle, 1973.
[103] This terminology is used to indicate large companies with multiple office locations.
[104] *Business Week*, November 6, 1971.

The BOC's position, which was communicated to managers with instructions to carry the message to the public, centered on the following points:

1. Connecting arrangements provided by the telephone company should be required in all cases where a customer wished to connect their equipment to the network.

2. Certification would eventually lead to the uncontrolled interconnection of customer equipment.

3. The rates charged to residential and small business customers would increase.

4. For the financial benefit of a few customers and suppliers, all customers would pay more for less quality of service.

These scare tactics used by the BOCs rested on the proposition of the network being a "delicately balanced machine in which all parts must be reliable and compatible to enable any one of the billions of possible connections to be made." They argued this network was a vital national resource and a major contributor to the social and economic development of the United States. Further, it was constantly changing and improving which required complex centralized management and coordination to ensure its continued viability. This centralized oversight was effectively provided by the incumbent telephone companies. If new entrants were introduced, then it would clearly lead to deterioration of the network to the detriment of all users. An example of what the BOCs presented as evidence came from a 1972 study of more than 10,000 reports of a trouble condition on the Bell telephone network. The study stated that almost 5,000 of these were caused by the

customer's own equipment and in almost 1,500 of these cases, that equipment was causing actual harm to the network.[105]

AT&T generated the information on harms to the network from the records of the BOCs. It was not developed or reviewed by any independent authority. The BOCs used such "evidence" to solicit and widely circulate opinions by credible authorities. One such statement is this quote from a letter which the National Academy of Sciences sent to the FCC, "Uncontrolled interconnection to the common carrier network as it now exists would be harmful."[106] Beyond the impacts of creating harm to the network, there were also claims made on behalf of the Bell System due to their record of significant accomplishments. Francis Welch, the editor of the *Public Utilities Fortnightly*, an industry publication, cautioned the FCC to consider the benefits that accrue to the public by very reason of the size and success of the established telephone industry. Welch asked, "Would regulated competition have produced the transistor, Telstar, electronic switching, in short, the best telephone system in the world?"[107]

3.13 Federal Regulators Remain Unconvinced

The FCC continued to consider the option of not requiring any interface device if the terminal equipment was "certified" as compatible.[108] The BOCs filed arguments which contended the FCC was overstepping its authority by asserting primacy over actions taken by state regulatory commissions. At the encouragement of Southern Bell, the North

[105] Ibid.
[106] National Academy of Sciences to FCC, 1970, Collection 3, Record Group 5, Box 7. Pacific Telesis Group, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas.
[107] Francis Welch, *Public Utilities Fortnightly*, 1973.
[108] Certification was a proposed procedure for establishing and enforcing technical standards in the design, manufacture, testing, installation and maintenance of customer-owned terminal equipment which would enable a direct electrical connected to the nation's telecommunications network without the need for a protective interface device.

Carolina Utilities Commission appealed to the Fourth Circuit Federal Court in Richmond, Virginia to prohibit FCC actions in this matter.[109] Similar filings in other jurisdictions were precipitated by most of the BOCs in their respective territories. And, of course, the parent company AT&T was always in the fray with their arguments, suggestions or directives for the BOCs. An argument AT&T made to BOC management was that the United States had the best communications service in the world at the lowest cost, and hence there should not be any concern that the Bell System was too big to be regulated. Also, should a private organization be making such important decisions about such a valuable resource?[110] The fact was that it had worked well in the past, and yet, with the continually increasing importance of communications, perhaps too big could be bad. Searching for the strongest driver behind the breakup of the Bell System does seem to bring us back to this point.

The BOC's position was that any of the certification proposals would simply not provide the necessary protection of the network. In addition, administering a certification system would cost more than the current method of having the telephone company provide protective interface devices. The combination of loss of revenue and increased costs would adversely impact the ability to keep universal service affordable. Employees at all levels were being urged to communicate with the customers and the public on these issues. A key AT&T executive remarked, "Giving the Bell System a swift kick is *not* just kicking some big, private monopoly. It's really kicking the public because that's the only reason we exist – *to serve the public*."[111] This was an interesting, though not totally valid,

[109] Pacific Bell, "Regulatory and Court Cases on Competition," February 1, 1980, Collection 3, Record Group 5, Box 9, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas. (This document is a recap of all actions taken from 1968 through 1979.)
[110] Editorial, "A Competitive Issue," *AT&T Management Magazine*, March 1974, 4.
[111] Richard Hough, "A Competitive Issue," *AT&T Management Magazine*, March 1974, 6.

statement. The Bell System was a corporation owned by stockholders who required a return on their investment. As well as a million employees who desired to keep their jobs and receive good wages. Clearly, it was a very high stakes game.

3.14 Competition Intensifies

In 1974 the CPE market was becoming very competitive. The count of competitors in the business market included twenty-five providers of multiplexors to enable simultaneous calls over a circuit and fifty providers of modems to convert data from analog to improved quality and greater capacity digital signals. These competitors were in addition to over a thousand providers of telephone sets and/or PBXs.

The BOCs acknowledged the main reason for the growth of competition was the price. But, they contended the price differential between their offerings and those of new entrants was the result of regulatory decisions designed to create "contrived competition"[112] with different rules for the BOCs than for others. An example given was the use of sealed competitive bidding for a PBX system provided by the Bell System to the federal General Services Administration. It was illegal for the serving BOC to provide lower rates than those contained in their published tariffs which were approved by the FCC or the appropriate state regulatory agency. They could have revised the tariff, but since it was publicly available that would have negated the purpose of sealed bids for the BOC alone. And, if they did lower the tariff, then they would be obligated to provide the equipment at the same rate to all other customers. Many customers believed there was value for their business in fostering competition. The telecommunications manager of

[112] This terminology is attributable to Richard H. K. Vietor, *Contrived Competition*. Cambridge, MA: Harvard University Press, 1994.

Reynolds Metal switched to a competitor and then later switched back at a lowered price to Illinois Bell. He felt this forced the BOC to improve their lead time for installation, maintenance, and service changes. In his opinion, the BOC offered products and services that met his needs, but now they did it faster.[113]

A presentation by Pacific Telephone, designed for use in public meetings, cited its view of harms to the telephone network which would result without protective interface devices provided by their company. "These devices help to prevent equipment that isn't working properly from causing service problems for those people who are using standard equipment. By service problems I mean things like cross-talk, which is when other people's conversation can be overheard; or getting wrong numbers even though you've dialed correctly; calls that don't go through; errors in data transmission; or even incorrect billing."[114] The presentation went on to quote a study that Pacific Telephone had conducted in an effort to substantiate its claims of harms done to the communications network. They contended that a random sample of 9000 lines using customer-provided equipment experienced a trouble report rate 30% higher than comparable lines with only their company provided equipment attached. This was with protective devices installed and they were certain that if the protectives devices were eliminated the trouble rates would be much higher still. The key part of their claim was based on the argument that if one part did not fit or was incorrectly installed and maintained, then the whole telephone system was at risk. If it happened in only a few cases the impacts may not be serious. But, considering that there were many millions of phones in service, it was likely to happen many times.

[113] Barry Goldberg, *AT&T Management Magazine*, "Competitive Case Histories", March 1974, 8-12.
[114] Pacific Bell, "Our Position in California," April 3, 1974, Collection 3, Record Group 5, Box 7, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas.

That would constitute a very big problem for the telephone companies and more importantly for the country as a whole. They went on to contend, without any proof, that a customer-owned set without a protective device could inflict personal harm to a repair technician or a customer because of high voltage electric shocks.[115]

An example of the perspective of the operations people in the BOCs was given by a local manager in the San Francisco district of Pacific Bell. "When a customer's service goes out, he wants it back fast. But who should he call first if he's got his own equipment - Bell or the outside technician? Almost invariably, he calls us and quite often when we get there we discover the trouble's in the terminal or station equipment he's leased or purchased from an outside supplier. These customer visits are costing me money that I can't fully recover."[116] An impact felt by the operating companies was the reality that manufacturers of the terminal equipment could not be depended upon by the end user to continue to support what they sold. When a supplier failed to satisfy a customer, or may even go out of business, the customer looked to the operating company to solve the problem as its access lines and network required functioning terminals plus they had a regulatory obligation to provide telephone service. For extensions, the sellers were usually department stores or mail order houses and their included instructions stated the telephone operating company may require the purchase of an appropriate adapter. This was often ignored by the buyer. The BOCs claimed they opposed certification because it would not enable them to maintain the integrity, safety, and reliability of the network and thus be

[115] Ibid. (Inflicting personal harm is a rather ridiculous claim as there was no high voltage present on the line. The telephone set worked on -48v DC on hook and when the phone went off hook, the voltage dropped to 10v and reversed polarity. The current was limited to 35 milliamps. This is too low to cause any harm. When the phone was ringing there would be about 60v AC superimposed for the period of the ring and that would cause a mild shock if bare wires were touched, but certainly would not be dangerous.)
[116] Walt Lillie, District Plant Manager, *Pacific Bell Management Report*, 1974.

counter to the public interest. Their contention was that this would not alleviate the problem but instead would exasperate it.

Another component of the BOCs argument against interconnection of devices from other suppliers was in the form of damage to the service of other customers. The Public Relations Department at Pacific Bell prepared a presentation, with the review and approval of AT&T Public Relations, which was designed for local management to use in various meetings with groups of customers. The text was sent by the Vice President of Pacific Bell to selected managers who then sought opportunities to deliver the company's message. Following is a key argument presented in their public speeches:

> Certifying telephone equipment is a far cry from, say, giving electrical equipment the Underwriters' Laboratory seal of approval. With a toaster or a television set, there is only a one-way flow of energy. If your toaster goes on the blink and starts burning your toast and your TV set blows a fuse, it isn't going to bother the people next door. Their toaster and their television will still work all right. A telephone or a switchboard not only takes energy out of the system, it puts energy into it, which is why it must be compatible with everything else in the system. If the telephone network is to work properly, the parts must fit together exactly, like pieces of a puzzle.[117]

Efforts to guard against unauthorized equipment included a "line checking program" which used test equipment to determine the number and types of equipment at the customer premises. If such equipment was found, the line connection would be disabled. AT&T justified this program by pointing out the difference between telephones and appliances such as TVs and radios which used spectrum or lights and appliances which

[117] S. G. Worthington, "A Crossroads in Communications", Pacific Bell Public Relations transmittal to Pacific Bell Managers, April 24, 1974.

used electric power. The clear difference was one of only an incoming connection versus a two-way connection. They argued that faulty telecom equipment could thusly damage the entire network rather than only the singular owner of the equipment. The point as stated was that a telephone, ". . . must be capable of providing rapid, efficient two-way communications service, involving some 7 million billion combinations of possible telephone connections."[118] Put more simply, a defective set could affect services of many others. This was another fear tactic. The reality was not comparable to the electric utility situation where the power grid had experienced being disabled due to troubles at a large customer. It had not happened in the telephone industry, but it was not possible to prove the negative. That is, to prove it would never happen.

To further argue against certification, the BOCs also tried a different tactic, which was based not on service quality but in cost to the consumer. In their policy statement, Pacific Bell Telephone stated: "As competitors pick up more and more of the station equipment market, the revenue lost to the Bell System will have to be made up elsewhere. In other words, if 10% of the System's customers provide their own equipment – such as key telephone systems, PBXs and the like – telephone companies, Bell and Independent alike, would have to make up some $219 million, probably by raising the rates to residential and small business subscribers."[119] This is another example of a "fear tactic" and one which does not acknowledge that just as any other competitive business, they must now seek cost reduction efficiencies and/or other alternative revenue-producing products and

[118] Pacific Telephone Public Relations Department documentation of an AT&T public briefing regarding certification, Record Group 5, Box 7, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas. June 4, 1974.
[119] Pacific Bell, "Our Position in California," April 3, 1974, Collection 3, Record Group 5, Box 7, Pacific Telesis Group, AT&T Archives and History Center, San Antonio, Texas.

services. Under the logic of protective regulation, society would not benefit from competition-inspired innovation. Such proclamations by AT&T and the BOCs planted the seeds of their own destruction. They may have been better served to push harder on their own vast R&D resources to combat competition.

3.16 FCC Approves the Certification Process

Efforts by the BOCs to make their case about potential costs and damages were not successful.[120] Certification of terminal equipment was approved by the FCC in October 1975, but not implemented for two years. AT&T filed legal actions in hopes of overturning the FCC decision. Ultimately, after the U.S. Supreme Court reviewed an appeals court decision and refused to hear the case, the certification process went into effect in October 1977.[121]

The FCC's ruling was based on the conclusion that the telephone company protective connecting devices were unnecessarily restrictive on the customer's right to use equipment which they owned. The commission prescribed that terminal equipment should be connected through standard plugs rather than direct wiring. Also, all terminal equipment would be required to meet FCC specified technical criteria designed to prevent any harm to the network. If the BOC could prove that criteria were not met, the equipment could be disconnected and the customer was charged for a service trip. Hence, if equipment could achieve certification there would no longer be a requirement for an interface device

[120] These arguments seem somewhat like the frustrating warning from Apple when you plug in a simple charger sold by someone else: "This is not an authorized device…." The difference, however, is that the cell phone market is highly competitive and not a regulated monopoly as was the case with the telephone system.

[121] Gerald W. Brock, *The Telecommunications Industry* (Cambridge: Harvard University Press, 1981), 248-249.

provided by the telephone company to be installed between that equipment and the public network. The FCC ruling did require the manufacturer to pay for and pass tests using network termination specifications approved by the FCC. This ruling brought into play long and detailed negotiations in standards bodies to establish specifics of the connecting device and criteria for testing to determine compliance. AT&T and the BOCs were major players in these bodies and directed their extensive resources toward efforts to delay implementation by continuing to claim "network harms" caused by each newly proposed device and by arguing for complex and expensive criteria to be established for each new product to be able to meet the standards required for certification.

The position of the FCC, and supported by the courts, contradicted the view expressed by the BOCs and the National Association of Regulatory Utility Commissions which represented State Public Utility Commissions. The general thrust of the FCC's view was that the BOCs took advantage of a monopoly position and were slow to implement advanced technology which would make the embedded equipment obsolete. This was consistent with the view expressed by Roland Homet, the Office of Telecommunications Policy's chief of studies and analysis when his agency was supporting rules to enable greater competition. Homet stated, "It will bring the bright guy out of the basement with new ideas. Now, if he bothers to develop them, he's forced to sit on them because regulations make introduction difficult, if not impossible."[122]

Media outlets also looked favorably upon the efforts and successes of smaller companies going up against the huge telephone monopoly. This was the case regarding

[122] Roland Homet, June 2, 1975.

the BOCs efforts to resist competition in CPE. Government officials were influenced by public opinion which media helped to forge.

By the end of 1975, the FCC and most state regulatory agencies had approved a program of certification based upon whether the equipment was compliant with the appropriate standards. This allowed the more common types of customer-owned terminal equipment to be connected to the local telephone network. Certification had to be done by a professional engineer who was registered as competent in telephone equipment by the state agency. There would be no further cost to the customer beyond the cost of the terminal device and an inexpensive plug-in device to enable the phone company to test the line. For the customer, this was a significant saving over the previously required interface device which the telephone company provided for about fifty dollars and also charged a continuing monthly fee of about five dollars.[123] These rulings were not retroactive, meaning that customers with existing equipment would have to continue to pay the monthly fee. Therefore impacts on the revenue requirements from other sources for the operating companies was felt over time instead of immediately.

3.17 Economic Impact on the BOCs due to CPE Competition

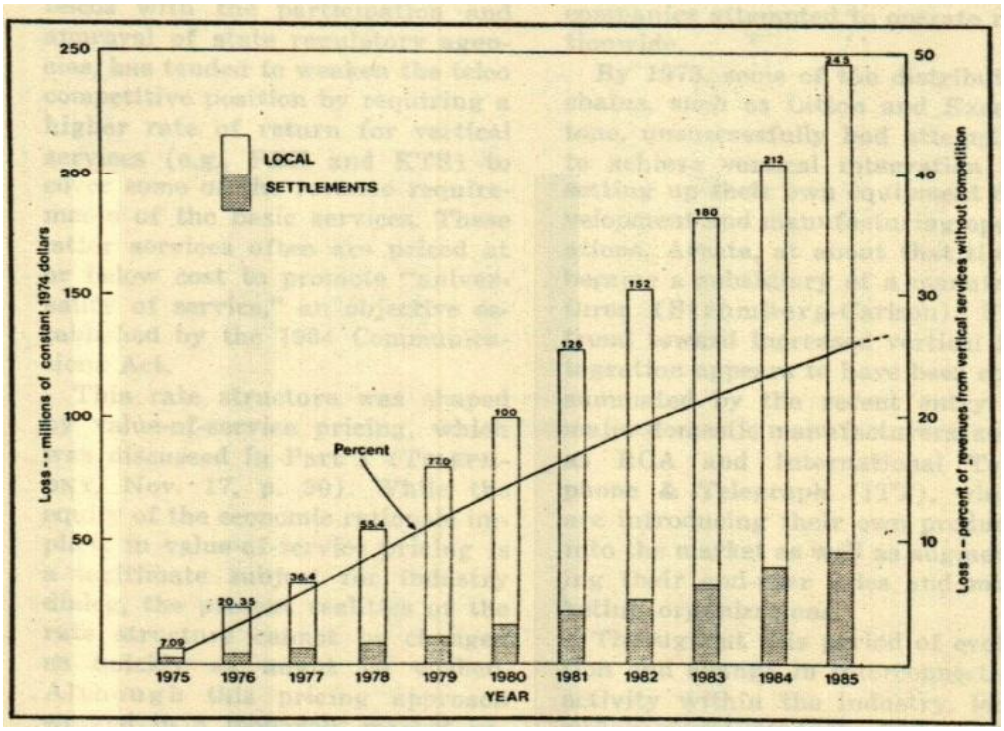
The pricing approach used by the BOCs was based not on costs, but rather on "value of service." This methodology required significant contributions in excess of costs from the basic access lines as well as from "vertical services" attached to the lines, such as call forwarding, and most notably from the telephone sets. These contributions covered the costs of the local exchange network which connected lines to each other and to the long

[123] Eugene Raleigh, Information Officer of California Public Utilities Commission, April 25, 1975.

distance network. The economic impact of competition in terminal equipment was best assessed at the level of statewide operations because cost and revenue accounting, financial management, equipment purchasing, profit and loss and rate setting by the state regulatory agencies were centralized there. Generally, there were no provisions for compensating the impacted telephone company for the revenue lost due to early removal and retirement of its displaced equipment. In this regard, rate base regulation worked to the disadvantage of the BOCs by denying them the flexibility needed in a competitive environment. Premature replacement of CPE supplied by a BOC with a competitor's equipment resulted in a shorter period over which the BOC "earned" revenue. The effect was to reduce the allowable rate of return for the BOC below what was authorized by regulators.

In the residential market, competitors were particularly successful in replacing telephone set extensions. Customers generally desired to keep at least one set furnished by the telephone company to assure a reliable connection. In the business market, key telephone systems, PBXs, and extension sets were vulnerable in segments with stable installations such as hotels, hospitals, and schools. In these cases, an attractive aspect of making purchases rather than leasing equipment from the telephone company was because the capital cost could be written off for tax purposes and would also reduce the life-cycle cost for accounting purposes. In December of 1975, the projected losses of annual contribution to local and toll contribution from terminal equipment were displayed in the following graph.

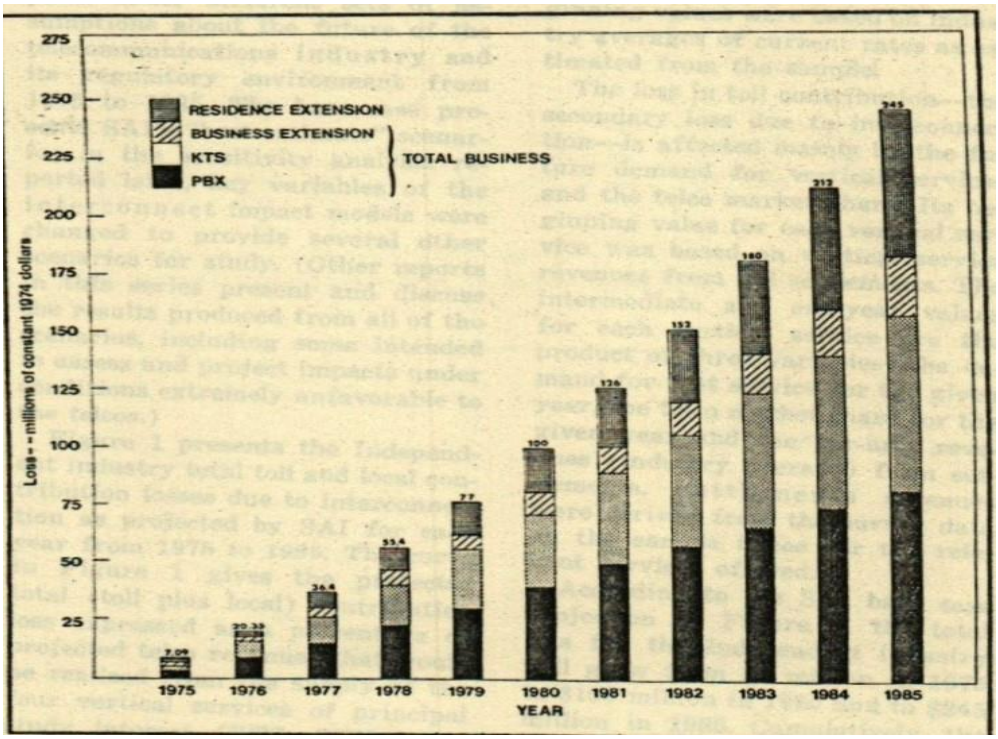
Table 1 – Projected losses for non-Bell operating companies[124]



As shown above, the expected residential extension losses were significant. But, as apparent from Table 2, the fears of the operating companies were greater when it came to anticipated losses of terminal equipment in the business segment. In that segment, extensions were not as important as the Key Systems and PBXs and those losses were expected to significantly exceed any other area of the terminal revenue. While these two charts display projected impacts on non-Bell companies it was clear the same impacts would be felt by the Bell companies and, of course, very damaging to the Western Electric manufacturing arm of AT&T.

[124] *Telephony Magazine*, December 1, 1975, 29.

Table 2 – Projected losses for non-Bell operating companies in CPE by market [125]



On March 18, 1976, the FCC ended AT&T's virtual monopoly over the equipment which it permitted customers to connect to its telephone lines. The ruling applied to telephones sets, switchboards and various other equipment made by private vendors. The FCC dismissed AT&T's widely publicized opinion that independently manufactured equipment was incompatible and would damage the phone system. It ruled instead that there was no valid legal or technical reason to exclude others from manufacturing telephone equipment.

[125] Ibid.

Even though terminal equipment and specialized voice and data transmission services were being opened to competitors, the position still held by state and federal regulators continued to be that regular voice telephone service was and should remain a monopoly by the local telephone operating companies. This was stated in 1975 by Richard Wiley, Chairman of the FCC at a convention of telephone operating companies. Chairman Wiley said, ". . . competition is the desired state of the marketplace in our economic system and regulation is an imperfect substitute for intelligent business responses to supply and demand pressures." However, he went on to say, ". . . there is absolutely no question in my mind that basic MTS (Message Telephone Service) and WATS (Wide Area Telephone Service) involve monopoly characteristics and public interest considerations which dictate regulation rather than competition."[126] This was a logical viewpoint at that time for the same reasons of limited resources, public right-of-way access and universal availability which applied to other regulated monopoly enterprises.

Vertical integration had long been a major goal of many companies. It was necessary for a highly competitive business to secure every opportunity to reduce costs. Owning all the steps in the business process was a highly regarded pathway to success. In 1976, the Justice Department began looking again at the Bell System as a violator of antitrust laws. Particular attention would be given to Western Electric, the manufacturing arm of the Bell System. They were the exclusive provider of the telephone network and terminal equipment and most types of supplies to the operating companies. As such, they were consistently able to undercut the pricing of other potential providers. With a captive

[126] Richard Wiley, speech at United States Independent Telephone Association, November 1, 1975.

market, Western Electric was able to provide just what was needed; when it was needed. Bell executives proclaimed how effectively the Bell System had performed with this arrangement. Over the period from 1950 to 1975, Bell companies had reduced their number of employees from 16 per 1000 telephone lines to 7.5 per 1000.[127] Of course, much of the reason for this was the advent of new and more efficient technologies, such as transmission multiplexing and electronic switching. Other potential equipment providers believed that if given the opportunity they could effectively compete with Western Electric. Telephone companies firmly believed the trends toward "dis-integrating" their services meant, ". . . the price of telephone service for the average American household and small business will go up and the quality of service will go down."[128] They argued that universal telephone service at the lowest possible price was a goal set by Congress in the Communications Act of 1934. To achieve this goal telephone companies were allowed to be monopolies in the territory they served and were required to operate under strict public regulation. Competitors would duplicate the investments already made by the regulated companies and would aim at serving only to most profitable customers. The incumbent telephone companies had set terminal and basic service prices higher on businesses than on residences to cover the costs of providing universal service to residential customers. Similarly, long distance service was "rate averaged" to allow calls over little used and costly to operate routes to be priced the same as calls of heavily used and less expensive to operate routes. The companies argued that allowing competition to "cream skim" would

[127] Harry Kallshian, General Manager – Pacific Telephone, *Palo Alto Times*, March 17, 1976.
[128] Gordon Hough, President – Pacific Telephone, *The Examiner*, March 29, 1976, p. 29.

undermine the goal of universal service. Prices for basic terminals and telephone services would have to be increased and the loser would be the general public.

In summary, it is noteworthy to recognize the inability of the huge regulated telephone monopoly to win against the movement toward deregulation even though it had tremendous resources to draw upon to attempt to persuade the public, federal regulators and the courts. The predisposition toward competition as the preferable option for the United States business environment was becoming preeminent. Implications for future events is clear in retrospect. Competition in CPE was only the first step toward opening all aspects of telecommunications to competition and forthcoming actions culminating with the end of the Bell System.

CHAPTER 4. DATA TRANSMISSION AND DEREGULATION

Developments during President Ford's time in office and the legacy of initiatives on telecommunications are discussed in this chapter. Also, the significant impacts which emerged during the period of President Jimmy Carter's campaign and his early time in office are examined. A major driver of the changes was government actions. But, the impetus for those actions came from several different sources. Carter's philosophy concerning the proper role of government was key. He advanced the positive attitude toward deregulation which began to emerge under President Ford.

Advances in technology enabled alternative options to the embedded telephone company to appear for equipment and transport. The combination of technology advances and a more positive governmental mindset encouraged the entry of new competitive options. New competitors included not only startups but also powerful established companies with large resources to draw upon. Impacts of these factors during this time frame are also investigated.

4.1 Business and Government

The relationship between business and government has always been complex. Never more so than during the 1970s when President Jimmy Carter, a Democrat with state government experience, some business experience, but no federal government experience, was wedged for four years between two periods of Republican administrations. Coupled with the tenor of that period toward regulation in general, there was also a major shift in technology which impacted telecommunications. McCraw captures it this way, ". . . a situation of natural monopoly prevailed for many years in long-distance telephoning, based on the once valid principle that a single set of transcontinental wires could most

economically serve consumer's needs. But in the 1960s and 1970s, a technological revolution in microwave communication destroyed that premise and ended the natural monopoly in long-distance telephoning."[129] This observation by McGraw on technology is one example of recognition that technology can have very significant impacts. He acknowledges how technology enabled the emergence of new companies who then sought to compete with AT&T and the Bell Operating Companies (BOCs). Vietor adds to these two factors of technology and entrepreneurship what he terms new economic and political conditions of the 1970s and what he describes as a regulatory failure. He writes about the convergence of all these drivers and their impacts, "The process accelerated in the mid-1970s until it seemed to spin out of institutional control. This transition, from regulated monopoly based on electromechanical technology to regulated competition based on electronic digital technology, culminated in the breakup of the Bell System on January 1, 1984."[130] While Vietor and McCraw focus on transport and switching, technological advances had similar, and earlier, impacts on Customer Premises Equipment (CPE) as well.

While debates over the role of government in business did precede Jimmy Carter, the evidence demonstrates the pivotal nature of his time as President of the United States and the impacts of his actions. Carter's promise to citizens was that he would help the poor and aged, improve education, provide jobs and not waste money. To achieve this end, his approach with respect to the economy, which was entering a deep period of high inflation with no growth, was to replace regulation with price competition and encourage new entrants to compete with established companies. The presumption was that less regulation

[129] McCraw, *Prophets of Regulation*, 307.
[130] Vietor,168.

would lead to more competition, lower prices, higher volumes and more jobs while also reducing the cost of government and lowering taxes.

It is important to note that the congressman most prominent in the telecommunications debates during Carter's tenure, and a supporter of his philosophy, was Democratic Representative Lionel Van Deerlin of California. Van Deerlin was Chairman of the House Communications Subcommittee and led the creation of the proposed Communications Act of 1980, which provided the impetus for the antitrust case decision that ended the Bell System monopoly. This bill aimed to reform the regulation guidelines set forth in the 1934 Communications Act. It addressed the impacts of nearly fifty years of change in the telecommunications industry, including the advent of computers, microwave and fiber optic transmission, and digital technology. Van Deerlin argued the importance of opening telephone service to competition and letting the marketplace determine rates. He maintained that passage of the 1980 Communication Act would encourage telecommunications innovations, lower customer rates, and advance productivity.[131]

Carter captured these aspects in the opening paragraph of his message to Congress urging action to reform telecommunications by writing about three goals, "Legislation is needed to eliminate needless regulatory control, encourage competition and innovation, and keep telephone service affordable throughout the country."[132] During the period of Carter's presence on the national stage, players across a broad spectrum of industry,

[131] Interview of Lionel Van Deerlin Conducted by Carol Lof, IEEE History Center, February 19, 1980. http://ethw.org/Oral-History:Lionel_Van_Deerlin_and_Charles_Jackson, accessed August 10, 2016.
[132] President Jimmy Carter to Congress, "Presidential Message: Regulatory Reform of the Telecommunications Industry," *U.S. G.P.O*, Series: (96th, 1st. session: 1979), no. 96-192.

consumer groups, law, and government took active roles in establishing the context and arguing their positions. The ultimate result of this drama did not materialize until after Carter's departure.

This chapter explores the impacts of data communications which began to develop in the mid-1960s and continued to expand, change and grow in importance. A prime example was a data service referred to as "time-sharing." This service enabled multiple users to simultaneously share a computing resource from remote terminals connected to the same communications network as traditional voice services. Impacts which occurred when boundaries between voice communications and data processing started to become blurred are explored in this chapter.

4.2 Potential IBM and BOC Overlaps

In the computing world, IBM was a leader in the concept of time-sharing. It was implemented based on the recognition that a single expensive computer would be more efficiently utilized if multiple users could be provided access at the same time. Individual users typically would enter bursts of information followed by long pauses. With a group of users, the pauses of one user would be filled by the activity of the others. However, there were security concerns and error conflicts which occurred. Also, the costs of individual computers declined and their functionality increased. Eventually, due in part to the internet, time-sharing of computing resources declined in value.

An approach somewhat like data time-sharing was also tried by the BOCs. It was to sell voice switching services (known as Centrex) as an alternative to locating a Private Branch eXchange (PBX) on the customer premises. Centrex had the advantage that installation and maintenance could be done by telephone company personnel on

continuously-staffed offices of the telephone company. This relieved the customer of the costs to provide their own floor space and trained technicians, which were required for the PBX. Each phone station had its own connection to the switching equipment in the BOC central office. Since the BOCs had the embedded facilities, using 'right of way' and conduits shared across many services, Centrex was an offering that competitors could not match.

But, like time-sharing in the computing world, Centrex also disappeared. A difference though is that Centrex was a clear example of how poorly the BOCs understood customer needs and could be uninformed about impacts on their customer's operations. The mentality was that if it was good for Bell, then it must also be good for the customer. Centrex required many more lines from the telephone office to the customer site. For calls within the customer premises, it was very inefficient. The shortcomings of Centrex were particularly clear as competitors developed new generations of premises equipment with added features that were less costly and often more beneficial.

As Centrex declined in value to the BOCs for enhancing their position toward competition, another move was also underway. This was driven by technology and not by regulation. It was the merging of communications and computer technologies. *Business Week* pointed out this evolution and its impacts by writing, "The office switchboard business is beginning to look more like the hotly competitive world of computers than the traditional telephone industry. Dramatically changing technology has virtually made the

nation's 200,000 private branch exchanges (PBXs) obsolete."[133] This prediction came true, but it took longer than anticipated by that quote.

As described in the preceding chapter on voice CPE, William Ellinghaus, President of New York Telephone, was among the key executives in the BOCs who realized competition in CPE was inevitable. In 1970, Ellinghaus noted that his company offered 70 different types of data sets with 20 speeds of operation up to .5 megabits per second. If customers desired to provide their own modems, New York Telephone had a variety of data access arrangements to permit their equipment to be interconnected to the switched network.[134] In this matter, he differed from the official AT&T view which continued to argue that based upon their studies 8.5% of data equipment produced signals three times stronger than authorized, which increased noise on the network.[135]

Regardless of which view was more accurate, it was clear that demands for data transmission continued to increase and AT&T and the BOCs had to respond. Advances in computer communications led to increased sophistication of users with changing needs for their connectivity. (The terminology of "computer communications" in the second half of the 20th century generally created images of a computer manufacturer, especially IBM, and a large business user of computers.) A book by JoAnne Yates, *Structuring the Information Age: Life Insurance and Technology in the Twentieth Century*, is an excellent study of the

[133] *Business Week*, January 19, 1976, 42.
[134] William Ellinghaus, President New York Telephone, *Public Utilities Fortnightly* (October 1970), 23-24.
[135] AT&T, *A Competition Issue* publication, 3/4/1974.

relationship between IBM and a large business user, Prudential Insurance, in the early years of computers.[136]

4.3 Going Beyond a Single Premises

Impacts resulted from the growth in sophistication of all users and the need for a telecommunications structure which extended beyond the user's premises to diverse locations. The leading edge certainly was large business. However, small businesses and consumers would be following the same pathways. As the demands of sophisticated users continued to expand beyond simple voice communications, opportunities and challenges accelerated for BOCs and their growing universe of competitors.

John deButts replaced the retiring Haakon Ingolf Romnes as AT&T Chairman in 1972 and served until 1979. DeButts brought a more modern perspective to the company. An example is his recognition of the growing demand among customers for increased capacity, faster operation and more reliable data communications terminal equipment. These advances in terminal equipment were critical and necessary in this emerging market. But, terminal equipment enhancements alone were not sufficient. Mr. deButts charged the Bell family of companies to aggressively push forward with improved capabilities for data communications in transport as well as in terminal equipment. He remarked that AT&T welcomed competition in data terminals as it increased demand for the volume of transport services the BOCs could provide. DeButts touted the Bell System's position in the terminal market and bragged about the variety of different data terminals it had available to customers.

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[136] JoAnne Yates, *Structuring the Information Age: Life Insurance and Technology in the Twentieth Century*, Baltimore, Md.: Johns Hopkins University Press, 2005.

As an example of Bell Labs research and development capabilities to create new equipment and services, deButts used Picturephone. He said, ". . . it's sure to grow rapidly; maybe as many as 100,000 sets will in use by 1975."[137] On that prediction, he was very wrong. Kenneth Lipartito, in an article written for *Technology and Culture,* described the history of Picturephone, "One of the proudest achievements of Bell Telephone Laboratories in the post-World War II era, the video telephone system, Picturephone, ended its brief life as the Labs' biggest flop." However, Lipartito acknowledges Picturephone influenced innovators and users to follow a certain trajectory of information technology. Even though it disappeared from use, it is reasonable to examine the capabilities of communications we have today and trace their roots to Picturephone. Thus, it was not a commercial success, but it was successful in the sense that it made significant impacts on the world in which we now live.[138]

4.4 Data Services Present Economic and Regulatory Issues

At the annual conference of the Computing Machinery Association in August 1971, a diverse panel representing various stakeholders debated the economic and regulatory aspects of data communications. The panel included a former FCC Chairman, an AT&T Vice President, an officer from a data communications company, a telecommunications industry financial analyst, and an economics professor. The AT&T representative opened the discussion with the assertion that the FCC was developing a philosophy of splitting the communications market by limiting incumbent telecommunications companies from entering new lines of business, such as data processing. All members of the panel generally

[137] John deButts, *Forbes Magazine*, January 15, 1971, 43.
[138] Kenneth Lipartito, "Picturephone and the Information Age: The Social Meaning of Failure," *Technology and Culture* Volume 44, no 1 (January 2003): 50-81.

agreed that the FCC had not sufficiently addressed crucial decisions on matters such as pricing, cross-subsidization, and competition. The panel member from a prospective competitor to AT&T expressed the concern that without intense FCC scrutiny AT&T would be able to crush any new provider by using its vast presence and economic power. The FCC had said no cross-subsidization would be permitted, but there was no plan in place regarding how to identify cases and enforce the policy.

Next, the AT&T panel member maintained that the competitive products of its Bell System companies must be priced based the relevant costs of only those products. The AT&T plan was to abandon the long-standing policy of cost averaging across all products and regions. Brown and Heal discuss this topic in detail. They also note that "A special case is a single multiproduct firm which produces products for regulated markets. . . and produces products for unregulated markets. . . for example, AT&T."[139] When all telecommunications products and services in regions served by the Bell System were provided only by their regulated monopoly, this cost averaging policy where all products and services in all geographic areas were equally priced had been the means used to establish universal service. The goal was to permit all users to have access to all services at prices they could afford even when the cost to provide a specific service to a specific customer was greater than the price. Although it also meant that some products and service were priced above their cost and this became the target area for new competitors. Since the objective of universal service had been achieved, it was no longer part of the equation.

[139] Donald J. Brown and Geoffrey M. Heal, "Marginal vs. Average Cost Pricing in the Presence of a Public Monopoly," *The American Economic Review* 73, no. 2 (1983): 189-190.

AT&T argued the focus for their company must shift to ways to operate in a fair and competitive marketplace.

Paul Davidson, professor of economics at Rutgers, followed with an appeal for tight government control of telecommunications rather than depending solely on competition. He suggested government should set and enforce standards for interconnection because consumers could not determine what would work properly. Further, he believed real technological progress came about only through government action and enforcement. AT&T strongly objected to that view and mentioned cases of great advancements, such as the transistor at Bell Labs. To reinforce his point, Davidson referenced the transportation system, the space program, and development of ENIAC (Electronic Numerical Integrator and Computer), the first electronic general-purpose computer. These grand accomplishments he contended required what is referred to as ". . . the visible hand of government." Former FCC chairman, Newton Minow, responded that lawyers had overtaken the processes of communications regulation and it took much too long to get a resolution of issues.[140]

This panel represented well the different viewpoints of government's role. Yet, the fact was that competition and free enterprise was the direction being taken and would not be derailed. The BOCs realized this fact and pushed ahead with new approaches to the emerging competitive marketplace. One such response was to create competitive sales programs for terminal equipment across the various departments within each BOC. Marketing and sales were not significant departments in the BOCs before competition

[140] *Telephony Magazine*, August 30, 1971.

because the only choice for the customer was to buy an instrument from the regulated telephone company.

Of all the competitors and potential competitors, the one most feared by the Bell Companies was IBM. They had the expertize, the presence, and the cash flow to add communications systems to their computer and office products lines. There was a genuine concern on the part of regulators that many of the small companies, who were out to make quick profits and may provide cheap, lower quality products and services, could adversely impact the viability of competition in the eyes of the public. BOCs were quick to point out failures when they occurred. Failures would not be the case with IBM. An FCC commissioner, noted, "IBM is probably the only company that could compete with AT&T on even terms."[141]

4.5 The Power of Open Markets

Competitors to the BOCs contended that the FCC shift away from monopoly regulation was justified because the BOCs had failed to keep the nation's communications capabilities in line with the pace of burgeoning requirements of information services and abilities of new digital technologies to meet those requirements. Their position was that the United States flourished more readily with the expansion of alternatives and risk taking for innovation than it did with uniformity, certainty, and narrowly prescribed options. Two notable cases where AT&T was involved in innovation are teletypes and facsimile machines. Both teletypewriters (often referred to as telex) and facsimile machines had long histories of using networks to transmit information worldwide. The telex network

[141] Nicholas Johnson, FCC Commissioner quoted in: *Business Week*, November 6, 1971, 69.

used a switched network of teleprinters, similar to a telephone network, but for the purpose of sending text-based messages. Telex became popular in the 1920s in the United States using the telegraph network for applications such as stock market data and transactions. In 1931, AT&T introduced a much faster capability using the telephone network rather than the telegraph network. Similarly, facsimile

machines transmitted images initially over the telegraph network and by the 1930s over the telephone network. Popular applications for facsimile machines were news photographs, weather mapping, and law enforcement information. As stated by Jonathan Coopersmith in his book on the history of fax machines, "Ironically, faxing's success aided the ultimate acceptance and diffusion of digitalization by gently introducing users to the potential of immediate transmission and acquisition of information and images."[142] With the advent of digital technologies, it became clear that computer-to-computer applications could eventually replace both telex and facsimile services. AT&T was beginning to lay plans for exiting both declining service areas and focusing resources on future capabilities. An example is the creation of the Integrated Services Digital Network (ISDN) which would use a twisted copper pair of wires in embedded cables already in the network to carry digitally carry two digital voice channels and one digital signaling channel instead of only one traditional analog voice channel.[143]

The official company position was stated in a March 4, 1974 issue of the internal AT&T Management Report. It acknowledged the inevitability of competition in CPE. A good side to it was even pointed out. ". . . it's been a spur to us to do a better job on data

[142] Jonathan Coopersmith, *Faxed: The Rise and Fall of the Fax Machine*, Johns Hopkins paperback edition. ed. (Baltimore: Johns Hopkins University Press, 2016), 207.
[143] *Network World*, Volume 5, Number 46, November 18, 1988, pp. 63-66.

sets, for example, to get out there and *sell*, bring our products to the market *faster*, and serve our customers *better*. Some in the company could see the potential of data communications and the need to stay at the forefront, beginning with equipment on the premises. However, the same article still argued for an interconnection device for data equipment rather than certification.[144] The small, but growing, contingent who sought to "turn around the large battleship" that was the Bell System and "make it into a lean fighting machine" had a very long and uphill battle to fight. Little did they know at the time; it was a battle they would never win.

An early example of a revolutionary technology began to emerge in the 1960s. Working as an engineer with the RAND Corporation, the U.S. Armed Forces think tank founded after the Second World War, Paul Baran developed a new type of communication system that could continue to function if part of it was knocked out by a nuclear blast. At the height of the Cold War, the nuclear threat was very much of a concern. Baran's proposed system aimed to divide communications into tiny pieces and use distributed network "nodes" to pass those pieces around. If one node was knocked out, the others would pick up the slack. He published a paper on this system which described the concept and how it might operate.[145] His work was key in leading to the development of the ARPANET[146] which would evolve into the modern internet. His communications technology for carrying both data and voice over the internet is known as packet switching.

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[144] AT&T General Departments, "Management Report," Internal Communications, March 4, 1974, Collection 2, Record Group 5, Box15, SBC Communications, AT&T Archives and History Center, San Antonio, Texas.

[145] Paul Baran," Introduction to Distributed Communications Networks RM-3420-PR," The RAND Corporation, August 1964.

[146] The ARPANET was a project funded by the Advanced Research Projects Agency, the research arm of the U.S. Department of Defense.

In 1974, a landmark paper was published by the Institute of Electrical and Electronic Engineers which described the issues and outlined solutions for interconnection of packet switching networks. The concept was like a superhighway for transport and delivery of voice and data across different individual networks.[147] Still, it took over 30 years for the application of Voice Over Internet Protocol (VoIP) to become widely commercially viable.

The challenge to the BOCs in the enterprise market segment was clearly dramatic. However, it should be noted that the former BOCs still attempt today to serve that market, even though their monopoly position was destroyed. On the web page of today's AT&T, there is a proclamation of the merits of VoIP. It states: "VoIP integrates voice services and data into a single network, expanding the possibilities for communication while creating new and exciting paths for growth. High bandwidth and the reach of IP networks can help you reduce costs, improve voice clarity, and take your business voice service almost anywhere."[148]

Momentum for competition within the telecommunications industry continued to grow and was also spurred on by the successes in the growing competitive marketplace for voice premises equipment. More choices were being offered to customers and competitors were demonstrating the ability to lower operating costs for users while also offering more features. Questions were being asked about what other advances could result if more areas were competitive. The attention of Congress began to focus on rewriting the rules for

[147] Cerf, V.; Kahn, R. "A Protocol for Packet Network Intercommunication". IEEE Transactions on Communications. May 1974, 22(5): 637–648.
[148] https://www.business.att.com/enterprise/Family/collaboration/voip (accessed 12/17/2016)

regulation of the telephone industry. Emphasis was paced on addressing what other aspects of the industry should be open to competition. The two giants, IBM and AT&T, were on a collision course with respect to computers and communications.

4.6 Data Growth Accelerates

By the early 1970s, BOCs were aware of the explosive growth in data traffic as compared to voice traffic. In large metropolitan areas, the growing number of online computers accessing telephone lines contributed to a deterioration of voice service quality. But with the movement from analog to digital transmission and switching systems the traditional telephone network became better suited to carrying data communications traffic along with voice traffic. Similar advancements led to CPE capable of handling both voice and data traffic. Direct competition between and data and voice CPE and equipment was technically feasible. The possibilities included computers and data modems that could multiplex and concentrate voice messages and processors that could hold and then assign the flow of information to remote computers, thus combining the functions of both data processing and of storing and forwarding voice messages to distant users. The PBX market moved toward becoming a field for computer switching equipment. Facilitated by the Carterfone rulings, which opened the door to interconnecting other suppliers' equipment with the telephone network, the computer and telecommunications equipment industries were on a collision course. The first commercial system that contained both an electronic switching matrix and stored program control was announced by IBM in 1969.[149] Both industries had the capability and motivation, but the advantage still resided with the telephone operating companies due mostly to the long history of public policy regulation

[149] *Business Week*, April 19, 1969, 39.

which inhibited competition. However, pressure grew to review and modify regulations in anticipation of meeting the newly emerging customer demands through more open competition.[150]

As the Information Age advanced and requirements for data communications grew, the motivation also grew for IBM to use its strengths to become a powerful competitor to AT&T and its operating companies. AT&T and IBM were major players in the economy of the country. In 1970, AT&T annual revenue was over $17 billion and net income was over $2 billion. While smaller than AT&T, the IBM company was a leader in technology innovation and was continuing to grow. The revenue of IBM in 1970 was over $7 billion and net income was nearing $1 billion.[151] In July of 1974, IBM announced they were forming a subsidiary to buy into a venture to operate Communications Satellite Corporation. It signaled a potential for the giant computer company to compete "head on" in the field of communications. The battleground was expanding and the potentially financially lucrative boundary area between the industries of computers and communications appeared to be a hotspot. Computers were becoming integral to the BOC's network while the ability to interconnect distant computers was becoming essential to the continuing success of IBM.

Despite their common interests, there were huge differences between the two companies. Years of competition had forged IBM into a "lean-and-hungry" mode. Its management was geared to marketing and flexible accounting practices which enabled competition not only on product quality but also on pricing and on service, provided

[150] Irwin, *The Telecommunication Industry*, 41-3.
[151] Department of Commerce, "Historical Statistics of the United States", Washington DC, 1975.

through customer-oriented innovation and novelty. Whereas, top managers in the BOCs had risen through operating, engineering and financial departments and were dedicated to high quality and rigidly standardized telephone service with prices set by regulatory bodies based on investment. Competition and marketing savvy were not in their cadre of skills or interests.

In order to continue their growth momentum, both the information processing and the traditional telephone industries needed to expand sales in the large business market. This was where the offerings of the BOCs and IBM were increasingly overlapping. IBM and other similar companies saw it as essential to avoid having government regulations prevent them from entering what they considered logical extensions of their product lines and services. These areas were in the expanding sector of data communications equipment, computer network systems, and teleprocessing, which combined information processing and communications functions. This future office was envisioned to provide what was described as, "communicating typewriters, data-retrieval displays, and telephones with pushbuttons that double as computer input and display devices."[152] From the perspective of the BOCs, there was a fear that deregulation efforts may result in their loss of the lucrative market segment of large businesses. Without this highly profitable segment, the BOCs feared it may not be possible to subsidize the less profitable residential market and maintain their mandate to provide universal service.

[152] *Business Week*, July 27, 1974, 42-46.

4.7 AT&T and IBM go Head-to-Head

Innovations continued to emerge from the convergence of computers and communications. Computer technology was being rapidly deployed in telecommunications switching equipment. New data transmission and processing applications such as Electronic Funds Transfer were of increasing importance. The FCC recognized that the data processing industry was highly competitive and innovative and demonstrated no need for regulation. However, it was dependent upon the communications companies. This placed the BOCs in the roles of both a bottleneck supplier of services and a competitor in the data processing market. Therefore, the FCC considered strict safeguards to be necessary in order to restrain the market power of the BOCs and for the benefit of the data processing market.[153] With this perspective, the FCC began what became known as the Computer Inquiries (CI) which focused on issues surrounding the convergence of computers of communications. The first was CI-1 in 1966. It was following by CI-2 in 1976, and CI-3 in 1985.

As part of these proceedings, the FCC ruled in March 1976 that a communications common carrier could not offer data processing services or equipment unless a separate subsidiary was established for this purpose. This was

due to a concern that regulated non-competitive services might subsidize competitive data processing services. An impact of this ruling was the rejection of the BOCs "Dataspeed 40" computer terminal on the basis that it performed data processing.[154] Fearing more

[153] Cannon, Robert (2003) "The Legacy of the Federal Communications Commission's Computer Inquiries," Federal Communications Law Journal: Vol. 55: Issue 2, Article 2, p 15.
[154] Office of Telecommunications Policy, *Comments on AT&T Bills*, pg. 11, 1976, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.

attempted intrusions by the BOCs onto their turf and anticipating aggressive AT&T lobbying, the computer industry, led by IBM, continued to aggressively defend their industry in the ongoing debates.

Both companies were giants. But, it is interesting to consider that while AT&T had a significant lead in annual revenue, the operation of the company required a much larger investment in assets and personnel than IBM.[155]

Table 3 Comparisons of AT&T to IBM in 1975 ($ Billions)

	AT&T	IBM
Fixed Assets	85.1	15.5
Revenues	35.5	14.4
Net Income	3.2	2.0
Employees (000)	1092	289

With annual net income coming in at more than half of what AT&T earned, there was a much higher return on investment for IBM. Added to this was a greater perceived growth potential. Consequently, the market valuation of IBM was higher than AT&T. However, it did play well into the AT&T argument that they were not earning the great returns of a competitive company and thus were making the serving of all customers their higher priority instead of serving only the most profitable ones. Also, helping AT&T was the fact that they had many more union employees than IBM and government agencies did not want to alienate that group because of their political power.

[155] Harry Edelson, *Communications and Computers: AT&T and IBM,* pg. 1, August 24, 1976, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.

Distinctions between these two companies are important because AT&T was not allowed to offer data processing services and IBM was essentially precluded from the regulated business of communications. In view of the growing convergence of the businesses, debates focused on the resolution of their divergent modes of operation. IBM fired an early shot of the war by citing AT&T as one of its competitors in a Justice Department antitrust case. This case was filed against IBM in 1969 following an investigation which had begun in 1967. IBM based the claim that AT&T was their competitor due to $700M of revenue which IBM contended was data processing attributed to AT&T even though AT&T was not authorized to be using its regulated telephone network for data processing.[156]

Relationships between these two giants were complex as IBM was both the largest single customer and the largest vendor to AT&T. IBM took a one-third ownership stake in Satellite Business Systems (SBS), which provided long distance private transport services in competition with AT&T. When this happened, AT&T lost a major portion of IBM's transport revenue. Possibly in retaliation, AT&T began to replace IBM computers in its operations with computers from IBM competitors.

4.8 Services Converge

By 1976, communications and data processing had converged. Desk-sized Teletypes were receiving data over wires and doing what it took a room-sized computer to do two decades earlier. With data processing and communications becoming intertwined, the worlds of IBM and AT&T were converging and the giants were becoming competitors.

[156] Edelson, 3.

There was a dichotomy of government involvement in overseeing and managing relationships in this new reality. On one level, the Justice Department had filed suits to break up both IBM and AT&T based on the premise that each company was too dominant. The dominance came from their size but also from their competitive tactics such as making premature product announcements and bundling of multiple offerings. But on another level, service offerings and their associated prices were regulated by various levels of government for AT&T and the BOCs. IBM was not similarly regulated. Caught in the middle was the FCC. The question to be addressed was whether the FCC should support regulating computing or removing regulation of communications.

The FCC had held that competition was in the public interest for voice CPE, but they had stayed away from regulating computers. With the advent of a Teletype, which did data processing and data communications, it became tenuous to differentiate between it and a computer connected to the telecommunications network. An issue to be solved was the process of setting rates that BOCs could charge for the emerging data services. The existence of common costs in the provision of telecommunications made cost assignments for individual services very difficult. Federal and state regulators were in general agreement that pricing of a competitive service should be based on long-run marginal cost, defined as the change in volume-sensitive costs resulting from a change in output. The reason regulators favored this approach was that BOCs could otherwise impede fledgling rivals if interconnection fees to competitors were higher than their marginal cost.[157] However, estimation of that cost was extremely complex when a competitor's service used the nationwide switched network. The BOCs preferred to keep

[157] Laffont, Jean-Jacques, and Jean Tirole. 2000. Competition in Telecommunications. The MIT Press. 184.

terminal interconnection regulation under state rather than federal control. While federal agencies were well equipped to undertake complex issues, the available staff at state agencies which could be assigned to investigate and establish pricing levels was more limited. Thus, states were more inclined to accept the established BOC's position that was articulated by a large and competent contingent of accountants and lawyers with a history of pleadings before the state commissions.

Also, it was problematic for governmental agencies to determine if the monopoly guaranteed pricing of a BOC's regulated business was being used to subsidize its own competitive services. In economics terminology, it came down to a debate between "fully distributed" or "marginal" cost accounting. BOCs desired to use a fully-distributed cost model to set interconnection charges. This meant all costs of building and maintaining the network would be considered and BOCs were enabled to charge higher prices for competitors to interconnect with their network than what a marginal cost model would have established. The BOCs would then be able to price their data services to end user customers lower than

their competitors. The BOC's hope was that cross-subsidization would insulate them against competitive erosion. This was precisely what IBM feared could occur. But, for the BOCs, their approach had an adverse impact. It sparked growing concerns among regulators, who worried that artificial maintenance of monopoly structures by the phone companies would foreclose entry of competitors, which may be firms with superior and more innovative technology. Accordingly, it grew increasingly unlikely that data communications competition would be forestalled. Unwilling to relent, AT&T continued intense lobbying to push a bill through Congress which included provisions to require

competitors in data communications to prove the local operating company was not able to provide a service before they were allowed into the market. That effort never succeeded.

4.9 AT&T Achieves a Successful CPE Product

Backed by the resources of Bell Labs and Western Electric, AT&T continued to push the envelope of what could be accomplished and presented a major challenge to IBM. AT&T's most successful data CPE product, which was leased rather than sold to customers, was the Dataspeed 40. It was capable of transmitting and receiving at 4800 words per minutes. Reaching that speed was a major accomplishment. IBM had strongly objected that this was clearly a data processing computer and not a communications terminal. According to IBM, AT&T crossed the line that separated hybrid communications from hybrid data processing. Either they were operating in unregulated markets outside of their mandate as a common carrier, or the company was extending its regulated activities into the previously unregulated data processing market.[158]

In response to Dataspeed 40, the FCC established a new definition intended to delineate the difference. Their proclamation was: "Data processing is anything in which the 'semantic content or meaning' is changed in transmission - or in which whatever comes out is a 'programmed response' to what goes in." Although this did little to clear it up, its mindset at the time can be seen in this comment from Richard Wiley, FCC Chairman, "I could see a lot of public-interest aspects involved in direct competition between AT&T and IBM for the terminal market."[159] In that era of promoting competition over regulation, many in the government were intrigued at the idea of head to head competition between

[158] Kevin G. Wilson, *Deregulating Telecommunications: U.S. and Canadian Telecommunications, 1840-1997* (Lanham, Md.: Rowman & Littlefield Publishers, 2000),156.
[159] Richard Wiley - FCC Chairman, Forbes Magazine, September 15, 1976, p. 56.

the giants of AT&T and IBM. Somewhat ironically, considering the future turn of events, AT&T endorsed the prospect.

AT&T Vice President, William R. Sharwell, was quoted in a Forbes magazine interview as saying, "Does anyone doubt that if the full talent existing in the Bell System were turned loose, it would not provide worthy competition for IBM?"[160] (He said worthy, but most likely he thought superior.) This is yet another example of the mindset at AT&T that they had the best and the brightest and could outperform any competitor. Joe McMonagle was a technical manager of data products at AT&T General Headquarters from 1975 to 1978. He offered this description, "I worked directly with Bell Labs on data engineering efforts and had many discussions with them about their technology and my belief that there was nothing really special about their products and any technical organization could produce comparable data sets. But, Bell Labs and AT&T top management tried to create this aura that one else was qualified. I think this attitude of superiority and invincibility played a role in the loss of their monopoly."[161]

4.10 Large Businesses Preferred to Purchase

The reality was that other companies could and did produce quality equipment. In addition, many large businesses found it more attractive to purchase terminal equipment from competitors instead of renting from the BOC. They based this decision primarily on their calculation that the overall cost to purchase would, over the period of its use, be lower than the cumulative cost to lease. But there were also other factors to consider such as payment arrangements, equipment features, and anticipated timing of obsolescence. The

[160] *Forbes*, September 15, 1976, 58.
[161] Joe McMonagle, Former Technical Manager of Data Engineering, AT&T General Headquarters, interview conducted by the author, February 14, 2016.

National Steel and Shipbuilding Company, for instance, estimated it would save $3500 a month by going to a competitor. That estimate was exceeded because over the first nine months it actually saved $7000 a month. A larger organization, the Scripps Clinic and Research Institute, estimated it would save $23,000 per month by choosing a competitor to the BOCs.[162]

Even with the growing challenge of competitors who would sell CPE to businesses, the BOCs continued to only lease equipment. The principle reason for this was that the BOCs had a huge embedded investment which was not fully depreciated. Their problems with a "lease only" policy continued to exasperate the BOCs management as more competitors entered the business market with continuously improving products. When the pace of change in technology grows more intense, then being a seller is even more advantageous than being a company that only leases. Residential customers tended to be less inclined to want their CPE changed to newer models, while business customers clearly wanted the latest and the best products to improve their operations. The BOCs were increasingly stuck with investments in undepreciated and outdated equipment that had to be removed and written off as a loss.

Pressure against AT&T, which provided 85 percent of the United States' phone service, was applied on multiple fronts. The Justice Department was pushing a lawsuit that would force AT&T to divest itself of Western Electric, its manufacturer of telephone equipment. Other firms were fighting for the right to duplicate the more profitable equipment and services. Manufacturers of data CPE, as well as voice CPE, wanted the

[162] United Press International, May 11, 1976.

unrestricted authority to sell to customers who would then connect to existing telephone lines. While the FCC continued to block AT&T's entry into computing, IBM was taking more interest in telecommunications firms.

In the business market, the future competitor the BOCs feared the most was IBM. As Steve Usselman describes in The Challenge of Remaining Innovative, there were few American companies in the twentieth century with greater notoriety than IBM. It was the world's dominant supplier of electronic computers, which was the glamor product of the century. By 1971, IBM had the highest market capitalization of any American company. Competitors such as General Electric and RCA had left the computer market.[163] But, the fear of IBM was due not only to its size and resources but also because of their entrenched position with business customers as well as their marketing and sales skills, and their track record of innovation. Although, as Usselman discusses in detail, IBM also faced the challenges of government antitrust cases.[164]

The FCC undertook an investigation to determine whether the BOCs rates were reasonable and their accounting practices were fair. John deButts, AT&T chairman, responded that home phone customers could see their bills rising by 70% if the BOCs accounting and pricing practices had to be modified to adjust to a potentially new environment replete with competitors in the more lucrative areas. However, firms trying to pull business from AT&T claimed increased competition would hold rates down and even force a lowering of charges for some types of services. Independent telephone

[163] Steven H. Usselman, "Unbundling IBM," 2009, in *The Challenge of Remaining Innovative: Insights from Twentieth-century American Business*, by Sally H. Clarke, Naomi R. Lamoreaux, and Steven W. Usselman (Stanford, Calif.: Stanford University Press, 2009), 249-279.
[164] Ibid.

operating companies and the nation's largest union, the Communications Workers of America, supported the AT&T position.

4.11 Ford Administration Initiates Deregulation Process

In April 1976, John Eger the Acting Director of the White House Office of Telecommunications Policy (OTP), issued a position statement that described the forthcoming role of the federal government. He noted that telecommunications technology had been developed "which can substantially change the quality and character of American society," yet we have been slow to recognize the institutional barriers which block progress toward this change and have been "too set in our ways to do anything about them." Eger argued that the United States stood at the threshold of a new age where the gross national product would be measured not so much in terms of goods and services as in terms of the production, storage, and the dissemination of knowledge. He believed the country had already reached a point where nearly half of its gross national product was directly related to the informational activity.[165] Because of this, it was critical that any governmental actions would not damage but instead would help to ensure a continued strong position.

The solution proposed by the OTP was consistent with the philosophy of the Gerald Ford administration. That was to relax government regulation and enable competition and the free enterprise spirit to accelerate and implement new innovations in technologies.[166] Eger went on to say this philosophy was the kind of government thinking that can hasten

[165] John Eger, Acting Director - Office of Telecommunications Policy, Executive Office of the President, April 6, 1976. This aggressive view of the importance of information technology to the gross national product may have been an overstatement in 1976. However, his view of the direction was correct considering where we are today.

[166] It is worthwhile to note that the philosophy of less government regulation in telecommunications was a bipartisan effort in this time period. It began under President Ford, but it continued in the Jimmy Carter years and resulted in actions to settle the AT&T divestiture case under Ronald Reagan in 1982.

the transition from technical feasibility to the actual implementation of new services. An example given was the FCC decision to allow customers to buy and install their own telephones and telephone-related terminals. It seems simplistic today, but he described how it may eventually be possible to receive stereo sound, deliver captioning, call up airline schedules on a screen and possibly even to shop or bank from your home on that same screen. Presumably, none of this could happen if the Bell System retained sole control of the industry and operated under the protection of rate-of-return regulation because the incentives to innovate and to take risks were not present.

Under the administration of President Gerald Ford, support for more widespread and open competition in telecommunications continued to gather momentum.[167] This was reflected in a speech by John Eger[168] after he had been appointed as permanent head of the Office of Telecommunications Policy. The Federal government did not typically agree with the arguments made by telephone executives. A press release from the Office of Telecommunications Policy made the case that implementation of new technologies which could bring the value of the information age to all users was being delayed by needless regulatory barriers. It made the case that the rulings which permitted customers to own telephone terminal devices connected to the network were a positive step forward. It also favored faster and higher capacity alternatives to telephone company facilities which could enable access to a greater amount of information sources. Examples of possibilities it described (and many others not imagined at that time) are now commonplace to us today.

[167] Gerald Ford was sworn in as President on August 9, 1974 and the DOJ filed the antitrust suit against AT&T on November 20, 1974.

[168] Eger had served as principal adviser to Presidents Nixon and Ford for telecommunications policy and as legal assistant to the chair of the Federal Communications Commission. Ford appointed him as director of the White House Office of Telecommunications Policy. In that capacity, he was a key player in the restructuring of the telecommunications industry.

The position it took was that government should be out of the business of regulating the telecommunications business because not only did it delay the advancement of new technology and services, it also imposed "hidden and unnecessary cost" which was paid for by the consumer.[169]

Eger stated, "We have allowed old institutions and old ways of doing things to dominate innovation and new horizons for progress. The time has come to put some adventuresome spirit into our national policy making and into the board rooms of our telecommunications industry."[170] This was an indication of federal support for deregulation and increased competition. But, the Bell System was not giving up easily.

Eger challenged the assertion of AT&T that rates would increase. He stated in a public forum, "For every study that says the rates are going to go up 70%, we can find one that says they are not going to go up. Most people do seem to agree that present competition does significantly impact the Bell System's total revenues, and it is rather difficult to extrapolate that kind of impact into anything approaching the 70% scare that hit a couple of months ago."[171]

The efforts by AT&T to get legislative relief were dealt a severe blow by the conclusions drawn in an analysis of the AT&T bills by the Office of Telecommunications Policy. ". . . the proposed legislation would result in the virtually complete monopolization of an industry in which historical,

[169] John Eger, Acting Director – Office of Telecommunications Policy, April 1, 1976.
[170] John Eger (Address, Office of Telecommunications Policy, April 1, 1976).
[171] John Eger. Speech in New York on March 19, 1976, 1976 Campaign, Sam Bleicher's Files, Consumers Folder, Box 31, Carter Library.

technological, and economic considerations suggest that certainly for some it, free market forces are quite capable of serving the best interest of the public."[172]

After President Ford replaced Eger as Director of OTP with Thomas Houser, the philosophy changed little. Houser outlined how the OTP would serve as a resource to Congress as it deliberated legislative reforms in telecommunications. He felt it was important to understand with clarity where competition could work and where it could not work. Houser was concerned that competition between highly regulated and non-regulated companies was fundamentally an unfair situation. Government agencies established prices for the regulated while the unregulated determined their own pricing structure. The reward went to those who did the best job for the best price. However, he pointed out, "We have learned that competition can create problems and not all competition is workable. We recognize that in rare instances economies of scale for a particular service may be so great that there exists the need for a sanctioned, but regulated, natural monopoly. Still, regulation often does poorly what competition does well. That is to reward innovation and financial efficiency. It generally also adds a time lag by studying and debated whether to authorize abandoning established methods and converting to more effective ones. Congress should move promptly to evaluate which segments can most productively be freed from government oversight."[173]

While AT&T fought every step of the way to avoid removal of regulatory protection, there were arguments made which contended benefits may well accrue to the

[172] Office of Telecommunications Policy, *Comments on AT&T Bills*, 1976, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library, 26.
[173] Thomas Houser, Director – Office of Telecommunications Policy, Speech at United States Independent Telephone Association, October 25, 1976.

Bell System. Those arguments were generally made by competitors or by customers who wanted more control, such as large technologically sophisticated businesses. An example is statements by Edgar Buttner, who was the head of an Interconnect Association representing suppliers and users. He believed that as customers added their own terminal equipment and developed more ways of using it there would tend to be more use of the Bell System communications network. In response to AT&T's concern that service would deteriorate because customers would not properly maintain it, his counter-argument was that since it was essential to the operation of businesses, they certainly would keep it in good operating condition. Further, Buttner argued that the net value to the Bell Operating Companies would be positive since the cost of maintenance, provided at a loss by Bell, would now be shifted to the users.[174]

Final approval by the FCC had been granted in August 1969 for the MCI request to provide private line transport. This meant the federal government favored allowing competition in all CPE and in network transport services. Hence it was logical to initiate discussions concerning the restructuring of the entire industry. All aspects of telecommunications were open to being challenged. For the Bell System, perhaps the greatest obstacle of all would be converting from the "only telephone company in town" into a company which was customer-focused with sales and marketing savvy. There appeared many lean and agile CPE competitors for the consumer segment.

[174] Edgar Buttner, President - California Interconnect Association, *Oakland Tribune*, April 14, 1976, 45.

4.12 Momentum Grows for Deregulation

AT&T had hoped that perhaps if a new president was elected in 1976, he might change the tone in Washington. Also, new members of Congress may also be more receptive to the company's message. That message was centered on the need for the highest quality telecommunications services and equipment to be universally available. The argument was that the best way to achieve this was by a single regulated company. Further, it was stated that taking care of the public good, as Bell had done for many years, was more important than introducing many new competing players seeking only profits. Unfortunately for AT&T a leading Democratic candidate, Jimmy Carter, already had his doubts. Early in his campaign, Carter staked out his beliefs about government which he said stemmed from his experiences, "I'm an engineer and a scientist and a businessman and a farmer more than I am a politician . . ." He then described how ineffective, expensive and cumbersome the federal government had become and how he wanted to streamline it. "And I don't want anybody this year to vote for me for President unless you want me as President to completely reorganize the executive branch of the nation's government. And, if I'm elected President, I'm going to do it. Primarily because the American people are sick of the bureaucratic confusion here in Washington."[175] This statement is an indication of his view toward the size and burden of government and portends his attitude toward regulation in general, though details for future initiatives in specific industries were only in a formative stage.

[175] Speech by Jimmy Carter, January 23, 1976, Consumer Federation of America Assembly, Sam Bleicher Files, copy in "Agency for Consumer Advocacy", Box 31, Carter Library.

Kevin Wilson in his book, *Deregulating Telecommunications,* contends the following concerning telecommunications, "Although regulatory reform did not figure prominently in his campaign for president, Carter embraced the movement following his election."[176] Evidence points to the inaccuracy of Wilson's statement. The Communications Act of 1934 established rules governing the telecommunications industry and had been only minimally modified since enacted. During the campaign, Carter did acknowledge the need to revisit the rules governing telecommunications. A letter written by Richard M. Neustadt, Deputy Special Assistant on the White House Staff shortly after Carter took office demonstrates not only support for telecom deregulation but also verifies that Carter did address the subject during his campaign. The letter was a reply to V. G. Hudson, President of the Telephone Service Company of Ohio. Neustadt wrote, "The President pledged during the campaign to review the Communications Act in light of the developments of the last 40 years, and he has often stated his belief that the burden of regulations upon business and the public should be kept to a minimum."[177]

4.13 Other Competitors in the Fight

In addition to CPE competitors, other strong and vocal opponents to AT&T were those companies who sought to provide competitive transport services. Chief among these was the first to gain limited approval for transport, MCI Telecommunications. Others included United States Transmission Systems and Southern Pacific Communications. Along with several other companies, they formed the "Ad Hoc Committee for Competitive Telecommunications (ACCT). They presented a particularly impressive (in style and

[176] Wilson, 100.
[177] Letter, Richard Neustadt to V. G. Hudson, 3/8/77, White House Central Files, "FG 128, 1/20/77-1/20/81," Box 184, Carter Library.

content) statement of their arguments to the Committee on Interstate and Foreign Commerce of the House of Representatives. The Introduction addressed the merits of the competitive free enterprise as the basis of the American economic system. It included a statement from an analysis made by AT&T of the results from one of their surveys of public opinion. The statement read, "If the public is to adopt our position fully, it must, in some instances, suspend its convictions and accept the antithesis of some long-held beliefs (e. g., that free enterprise means lower prices and higher product or service performance . . .)."

Regulatory agencies sided with competitors as demonstrated by remarks of the FCC Chairman, Richard Wiley. He said:

> Competition, in my opinion, has made AT&T and its partners better and more vigorous business entities and better and more vigorous public servants. Critics of the Commission's procompetitive policy originally argued that the "one carrier -- one system" concept was necessary to preserve the technical integrity of the telephone network. After nearly a
>
> decade of experience with the interconnection of customer-supplied equipment and specialized common carriers, the telephone industry has yet to document deterioration of the nationwide switched network. Thus, it is not surprising that the technical integrity arguments have now been superseded by the theme of adverse economic impact. In point of fact, however, Bell and the independents also have yet to prove any case of harm here either.[178]

In addition, the Director of the Office of Telecommunications Policy also weighed in on the debate with this strong statement in opposition:

[178] Richard Wiley, "Address to the International Communications Association," May 3, 1976, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.

> The whole basis for our free enterprise system is that business access should be won competitively in the marketplace by providing the goods and services that customers want. It is unbecoming for a company the size and the stature of AT&T to use its legal, political and economic power to extend its monopoly by governmental fiat into areas where monopoly is not called for. In my judgment, the government cannot let such an effort go unnoticed or unchecked.[179]

AT&T argued they did pursue new technology and services. In the annual report to shareholders the Chairman said, "In 1975, we brought new technology to the threshold of introduction that, beginning in 1976, will not only increase the versatility of the nationwide switched network but improve the efficiency of its operations as well."[180] Indeed, there were advancements and it is a tough case for either side to prove what impacts, positive or negative, would have occurred from greater competition.

In addressing the role of the FCC as the regulator of telecommunications, Carter pointed out the authority was granted under the Communications Act of 1934. He noted the Act was ". . . designed at a time when technology made monopoly the logical structure for telecommunications. That system, assisted by the rural telephone loan program, has nearly achieved the national goal of universal service—96 percent of all households and nearly all businesses have telephone service."[181] Carter maintained conditions had changed and pointed to the extraordinary technological advances since 1934. "In addition to the

[179] Clay T. Whitehead, "Testimony before the Senate Anti-Trust and Monopoly Subcommittee," July 9, 1974, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.
[180] John deButts, *AT&T 1975 Annual Report to Shareholders*, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.
[181] Speech by Jimmy Carter, January 23, 1976, Consumer Federation of America Assembly, Sam Bleicher Files, copy in "Agency for Consumer Advocacy", Box 31, Carter Library.

wired network, the telephone companies and new, competing firms are using satellites, lasers, microwaves. and miniature computers to provide more and more systems and services for business and homes. The new technology makes it possible to hold meetings, transmit messages, do research, bank, shop, and receive a widening variety of information and entertainment all through electronics. In the process, the technology has invalidated the old assumption that all aspects of telecommunications service are natural monopolies."[182]

4.14 A Last Ditch Effort: The Bell Bill

In 1976, proposed legislation was drafted by AT&T lawyers and introduced in Congress. In a rather desperate attempt, it proposed to continue a single, integrated telecommunications system and became commonly known as the "Bell Bill." This bill was cast as a modification to the *Communications Act of 1934*. It argued that the existing structure had successfully achieved Universal Service and a unified telephone network was essential to continue to maintain that goal. If enacted, it would have eliminated most competition in the telecommunication industry.[183] The initiative was aimed at achieving legislative action with the following provisions:

- Recognition that existing phone companies should continue to have a monopoly.
- Prevention of new companies entering any phases of phone equipment and services so long as they are already offered by the existing operating company.

[182] Ibid.
[183] Consumer Communications Reform Act of 1976, H.R. 12323, 94th Cong., 2d Sess. (1976)

- Authorization for the states to determine what equipment by outside suppliers should be permitted to be connected to phone lines.

Political activist groups, such as The Ad Hoc Committee for Competitive Telecommunications (ACCT), undertook rather scathing attacks on AT&T by contending that the Bell Bill was a final resort appeal to Congress after having failed to convince regulatory agencies, the White House Office of Telecommunications, the courts and the public that they should be protected from competition. The bill, they charged, ". . . is neither a 'reform' bill nor is it consumer-oriented. Rather, it threatens to deny American consumers innovations and options in choosing communications services . . ."[184] Huge firms also intervened against AT&T. Among these were IBM, Litton and General Dynamics. Extensive hearings were held beginning in 1977.[185]

In response to questions about why AT&T objected to letting business firms buy their own data or voice CPE from independent suppliers and connect to the BOCs networks, John deButts said, "That network is composed of literally billions of parts, each compatible with all the others. To work as a single system, it's got to be managed as one with all the components designed, built, operated and maintained to common standards." He acknowledged that others could produce quality equipment, but argued that the issue centered on how it was connected and maintained. He also described two cases when damaged to the network had occurred. One was from data equipment and the other was a PBX. The FCC Chairman, Richard Wiley, disagreed with deButts and contended there

[184]Ad Hoc Committee for Competitive Telecommunications, *Competition in Telecommunications*, September 29, 1976, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.
[185] *U.S. News and World Report*, November 22, 1976, 42.

were no proven cases of harm and in fact, AT&T purchased equipment from other suppliers and connected it to the network without any connecting device or any certification. Wiley's position was that it should be the responsibility of the FCC rather than the states to review and certify equipment because it was a national network and not a state-only network that was involved.

The IBM affiliate SBS prepared a position paper for lobbying purposes that attacked the proposed legislation. The paper stated:

> The proposed legislation would nullify recent actions by the FCC which have brought the fresh air of choice to consumers of telecommunication service and equipment. This is leading to significant improvement in costs and technology. All the while AT&T's profits and business growth have increased by nearly record amounts. The AT&T Bill would leave AT&T almost alone in deciding what service and equipment consumers would have and at what cost. While it and its allies assert that they are moved to this action by a concern for some consumers, the basis of that concern is demonstrably unsound.[186]

The paper goes on to make a case that the benefits derived from competition in terminals products had forced AT&T to expand the choices it provided and to move forward with new technologies. It contended the same would occur with competition in transport, as AT&T and an array of new competitors in the transport sector would meet

[186] Satellite Business Systems, SBS Position on AT&T Bills, 1976, pg. 1, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.

needs that AT&T previously was not motivated to do.[187] The paper charged that AT&T was using falsely founded fear tactics about impacts on basic residential service. As evidence, quotes from findings of the FCC were given which stated that competition had benefited customers in terms of features, functionality, and cost and had not impacted the company's earnings or rates for basic services. FCC quotes also concluded that situation was unlikely to change.[188]

Although SBS opposed continued regulation of telecommunications, IBM was willing to agree to telecommunications regulation with the objective of seeking to avoid regulation of the equipment and services which IBM provided. In a letter to newly elected President Jimmy Carter's domestic policy staff regarding the FCC inquiry into computers and communications, IBM stated, "Competition has proven to be the spur to innovation and the spawning of a variety of new products and services at the lowest possible prices to meet the diverse demands from all users."[189] IBM argued that regulation was appropriate only for pure transmission services and not for equipment installed on a customer's premises. While they acknowledged the right for carriers to supply premises equipment, they insisted safeguards were essential to ensure that regulated services did not subsidize the pricing of equipment. This was considered by IBM as a critical requirement to enable fair competition. Without it, IBM feared that AT&T would be in a position whereby they could undercut IBM pricing and make up any losses with increased prices for their regulated offerings.

[187] Ibid., 3.
[188] Ibid., 4.
[189] Letter, Robert S. Cecil to Richard M. Neustadt, June 10, 1977, Domestic Policy Staff, Government Reform Neustadt files, Computer Inquiry Folder, Box 22, Carter Library.

In a letter to the FCC Chairman, AT&T argued that users were pleased with its ability to offer a complete package that included transport as well as data processing equipment and services. In this regard, they took issue with the position of IBM and other data equipment providers and contended that separation of equipment and transport combined with a broad definition of data processing would limit the use of modern technology. The result would be to reduce user choice, restrict innovation, and dramatically limit data communication services to small or geographically remote users.[190] Again, this resonated with the AT&T refrain of universal service with uniform and reasonably priced availability to all users.

4.15 Carter Favors Action on Deregulation

The role of each president in the 1974-84 period is described by Jeremy Tunstall in *Communications Deregulation: The Unleashing of America's Communications Industry*. Tunstall characterizes Ford as a trot, Carter as a canter and Reagan as a gallop.[191] The Carter "canter" started right out of the opening gate of his presidency. The White House Office of Telecommunications Policy prepared a memorandum and forwarded it to Richard Neustadt, Deputy Special Assistant for Media and Public Affairs, on March 11, 1977. The memo outlined the suggested position for the Carter administration on telecommunications policy. The White House Office of Telecommunications Policy supported a congressional review of the Communications Act of 1934, made the case that regulatory programs of the FCC should be discontinued where they no longer served a useful purpose and recommended that fostering of market processes should be encouraged. It concluded with

[190] Letter, James R. Billingsley to Charles D. Ferris, October 17, 1977, Domestic Policy Staff, Government Reform Neustadt files, Computer Inquiry Folder, Box 22, Carter Library.
[191] Tunstall, 28-9.

this statement, "The President, therefore, wishes the Congress every success in the important task of ensuring that our very important communications systems are regulated as well as possible, with as little burden as possible to the public and to those subject to regulation."[192]

Making appointments is one of a president's main powers. Kevin Wilson elaborates on this subject regarding telecommunications legislation when he says, "Carter softened industry resistance to these bills by appointing pro-competitive commissioners to the regulatory agencies. Slowly, in a piecemeal fashion, the regulatory commissions began to introduce competition to the industry."[193] This worked because industry began to realize that legislative action could put an end to uncertainty due to incremental deregulation. The most influential of Carter's appointments with regard to telecommunications was that of Charles Ferris as Chairman of the FCC. The goal of this appointment was stated in a memo from Rick Neustadt to Stu Eiszenstat, Assistant to the President for Domestic Affairs and Policy. Referring to the appointment of Ferris, the memo said, "This decision presents a crucial opportunity to improve the Federal communications policy and implement the President's commitment to competition and improved regulation."[194] Even though the FCC is an independent agency, President Carter continued to press his goals with Ferris after his appointment as Chairman. In a letter to Ferris on April 11, 1978, expressing the need to seek all means to control inflation, Carter continued to push for pro-competitive measures by writing, "I believe that regulatory agencies can contribute to the effort by

[192] Memo, William J. Thaler to Richard Neustadt, 3/11/77, "Communications Act Re-Write," DPS-Gov't Reform, 2/18/77-1/10/78, Box 13, Carter Library.
[193] Kevin G. Wilson, *Deregulating Telecommunications* (Lanham, MD: Rowman & Littlefield Publishers, 2000), 101.
[194] Memo, Richard Neustadt to Stuart Eizenstat, 3/30/77, White House Central Files, "FG 128, 1/20/77-1/20/81". Box 184, Carter Library.

fostering competitive markets and prices, which often provide the most powerful restraint on inflationary pressures. In addition, we should attempt to use market forces more constructively than has been the case in the past to achieve our social goals."[195]

The efforts of Charles Ferris did achieve some success in meeting the aims of the Carter Administration regarding deregulation of telecommunications. In a letter dated June 1, 1979, Eisenstat wrote to Ferris, "I want to congratulate you on the dramatic regulatory reform steps the FCC has taken in the last few months. Your efforts are contributing substantially to the President's program of eliminating needless regulation and promoting competition."[196] In his book, *Telecommunications in the United States: Trends and Policies*, Leonard Levin includes a contribution from Douglas Webbink, a commissioner on the FCC during the tenure of Ferris. Webbink states, "The Chairman of the Commission, Charles Ferris, and some of the other Commissioners have been strongly committed to deregulating many of the services the Commission regulates. This may be seen not only from the Chairman's votes in Commission meetings and speeches but from the emphasis of the people he has chosen as bureau and office chiefs."[197]

FCC processes and congressional rewrite efforts for the Communications Act contributed significantly to pushing forward the deregulation and pro-competition agenda of Carter. However, as previously discussed, there was another major contributor toward competition in telecommunications that was not related to CPE and was not achieved in

[195] Letter, Jimmy Carter to Charles Ferris, 4/11/78, White House Central Files, "FG 128, 1/20/77-1/20/81," Box 184, Carter Library.
[196] Letter, Stuart Eizenstat to Charles Ferris, 6/1/79, White House Central Files, "FG 128, 1/20/77-1/20/81," Box 184, Carter Library.
[197] Douglas W. Webblink, "The Recent Deregulatory Movement at the FCC," in *Telecommunications in the United States:* ed. Leonard Lewin (Dedham, MA: Artech House, 1981), 62.

the Executive or the Legislative branch of government. That impact was from the Judicial branch and had begun prior to Carter. It was the request by Microwave Communication Incorporated (MCI) to provide high capacity transport between large cities in competition with AT&T. Like the debates on CPE, AT&T called this "cream skimming" and contended it would undermine the long-held belief that universal service was in the public interest while advocates said it was a movement toward a fairer system of cost-based prices. It is a dilemma, however, that even if it is in the public interest, a system of cost allocation is complex and debatable. This allocation problem exists in competitive as well as regulated markets. But, for a regulated business, it becomes a public policy issue.

4.16 Carter Position Consistent with the DOJ Antitrust Action

The United States Department of Justice (DOJ) had filed an antitrust suit against AT&T in the Washington, D. C. district court November 20, 1974. It was sweeping in its allegations and dealt with both CPE and telecommunications transport services. Joseph Kearney in an article in the *Hasting Law Journal* noted that the government claimed AT&T had used its size and national scope to impede competition in telecommunications industry segments that by their nature should not have to be served by a single provider.[198] The state-sanctioned franchises of the Bell System provided, on a monopoly basis, local telephone service to more than eighty percent of the nation's users. Thus, it had the means to do just what the government suit claimed.

Litigation of this case started before Carter took office and ended after his departure. However, much of the language of the settlement was pulled from the ongoing

[198] Joseph D. Kearney, "From the Fall of the Bell System to the Telecommunications Act: Regulations of Telecommunications Under Judge Greene," *Hastings Law Journal* 50 (August 1999): 1404.

congressional and regulatory proceedings during his administration.[199] In view of their impacts, the goals he outlined are central to capturing the essence of the entire debate. Though interrelated, exploring each goal separately achieves the best understanding.

This belief was not new to Carter as he held it as a basic tenet during his first campaign. At an event hosted in August 1976 by Ralph Nader, who was a prominent consumer advocate, Carter was asked if he favored competition in the telephone industry. Many aspects of the Bell Bill were deemed by consumer activists and potential competitors to the incumbent telephone companies as blatantly anticompetitive. Carter was also asked if he supported the government's pursuit of antitrust litigation against the Bell System. Carter replied, "I do favor competition within the telephone industry. I think that there are a couple of instances with which I am personally familiar as a businessman and as a candidate."[200] He went on to describe, as an example, in-building systems for large companies as an area where competition is a good thing. He said, "I have not observed myself, nor have I been presented with any proof that there is too much competition within the telecommunications industry now. My own inclination now is to think that there is not enough competition."[201] He also indicated support for the antitrust case.

Carter's comments at Nader's forum raised considerable concern within labor unions, as competitors to the BOCs typically were non-union shops. The Communications Workers of America (CWA) was an influential union with a large number of members employed by the BOCs and AT&T. Glen Watts, President of the CWA, personally

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[199] Michael K. Kellogg, *Federal Telecommunications Law* (Boston: Little, Brown and Company, 1992), 221.
[200] Transcript of Public Citizen's Forum, August 9, 1976, 1976 Campaign, Sam Bleicher's Files, Communications Folder, Box 31, Carter Library.
[201] Ibid.

expressed concerns about Carter's remarks and potential impacts on union jobs. Watts reinforced that the CWA had been a strong supporter of the Democratic Party and this position expressed by Carter was very damaging to their continued support. Stu Eizenstat, Carter's campaign staff aide for the 1976 election, alerted Carter to the sensitivities of labor and also made this strongly worded recommendation about the antitrust case, "Finally, no comment whatsoever should be made on the pending Justice Department litigation on this question, on the grounds that it would be inappropriate to comment on a case that is in Litigation. THIS IS A DIFFICULT ISSUE THAT SHOULD NOT BE DISCUSSED IF WE CAN AVOID IT."[202] Subsequent to the forum, Carter acknowledged labor's concerns and stated that he was still studying the issues. In a letter of reply to Glen Watts, Carter expressed appreciation for the support of the CWA and stated, "Certainly we cannot have massive disruption of employment in the industry and personal hardships for industry employees. . ."[203]

4.17 Carter's Uncertainties

Carter's varied statements led to uncertainty as to his real position. The following editorial cartoon issued in an industry publication captured this point.[204]

[202] Memo, Stu Eizenstat to Jimmy Carter, August 24, 1976, 1976 Campaign, Sam Bleicher's Files, Communications Reform Act Folder, Box 32, Jimmy Carter Library.
[203] Letter, Jimmy Carter to Glen Watts, September 20, 1976, 1976 Campaign, Sam Bleicher's Files, Communications Folder, Box 31, Carter Library.
[204] Lon B. Gregory, "Management Notes," *Telephone Engineer and Management*, September 15, 1976, 11.

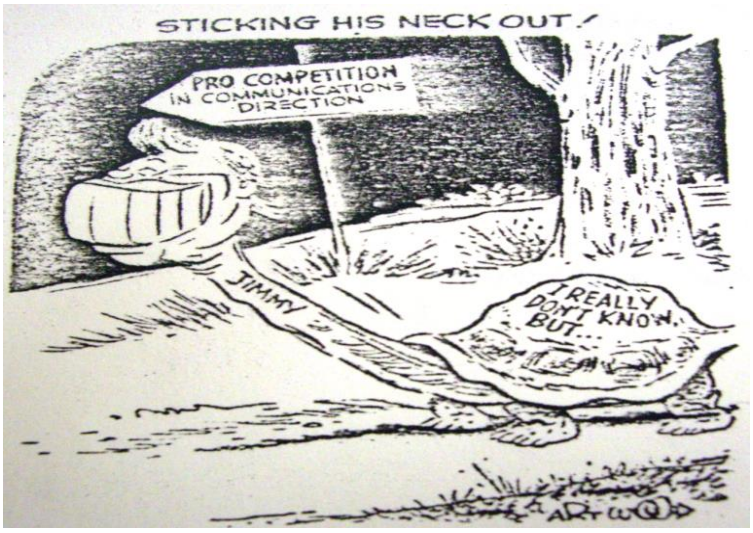


Figure 4 – Carter's Uncertainty

Some of Carter's uncertainty may have been founded in his background as an engineer and businessman. From that perspective, he could appreciate the arguments against opening up full competition although he did need help to understand the multiple perspectives involved with telecommunications deregulation. Briefing materials furnished to Carter by his staff contained a detailed and scholarly written paper that provided an analysis of the domestic telecommunications industry. The author, Laurence Singer, was a former lobbyist for the Consumer Federation of America and from 1969 through 1975 had served as a legal counsel for the FCC. In his work with the FCC, he had addressed telecommunications deregulation issues. In the briefing papers, Singer addressed the issues under debate and described the arguments from multiple perspectives. The value of the integrated system of telecommunications was recognized in a reference made to a recent decision by an Administrative Law Judge of the FCC. That decision acknowledged that

the combination of research and development, manufacturing, and operations in the Bell System had provided useful public benefits.[205]

Laurence Singer had noted in his contribution to the briefing papers during Carter's campaign, "Each FCC decision seems to create more problems than it solves, with no party entirely satisfied."[206] He mentioned the conflicts between the FCC and state agencies, between business and residential users, and between AT&T and its competitors. Further, he pointed out, ". . . the complexity of telecommunications policy problems is magnified by the substantial technological, social and economic consequences of any policy decision."[207] Singer correctly predicted the new administration would need to pay close attention to these problems and provide a guiding hand. However, he suggested to Carter that the complexities, and presumably the divisions of opinion around this subject, did not make it a useful campaign issue. Singer suggested the position to take was a non-committal one. Carter followed that advice during the campaign but after becoming president he eventually took a stand and made a lasting impact on the industry.

[205] Laurence Singer, *Domestic Telecommunications*, Briefing Papers prepared for Jimmy Carter, September 16, 1976, 3, 1976 Campaign, Sam Bleicher's Files, Communications Folder, Box 31, Jimmy Carter Library.
[206] Singer, *Domestic Telecommunications*, 8-9.
[207] Ibid.

CHAPTER 5. COMMISSIONS, CONSUMERS, AND CARTER

Chapter 5 reviews the position of the Carter administration regarding deregulation in general during his tenure. The specific issues faced and the positions taken related to the telephone industry are highlighted. The significant impacts the resultant policies made are discussed. Also addressed are the influences on his administration's policies resulting from the beginning of the campaign for a second term in office.

Jimmy Carter's 1979 message to Congress on telecommunications touted the benefits of deregulation of airlines in the previous year. He claimed this action saved $2.5B for passengers while increasing air travel and airline revenues. He believed similar progress could be achieved in the telecommunications industry through better services coupled with cutting costs. Carter wrote, "We cannot afford to have this progress frustrated by unwarranted regulation. We must ensure that competitors fight through their salesmen in the marketplace rather than through their lawyers in government hearings."[208]

5.1 Voices for and Against Regulation

Kenneth Lipartito in "Rethinking the Invention Factory," agreed that monopoly status gave AT&T certain advantages when it came to research. Lipartito stated, "Most notable, it could charge the costs of its research to its customers, in contrast to competitive firms, which must absorb the costs of unfruitful research."[209] This scenario was good for the company, but also considered by some as good for the public. This assumption of public good derived from the ability of Bell Labs to undertake both applied research and

[208] President Jimmy Carter to Congress, "Presidential Message: Regulatory Reform of the Telecommunications Industry," *U.S. G.P.O*, Series: (96th, 1st. session: 1979), no. 96-192.
[209] Kenneth Lipartito, "Rethinking the Invention Factory," in *The Challenge of Remaining Innovative*, ed. Sally H. Clark, Naomi R. Lamoreaux, and Steven W. Usselman, Innovation and Technology in the World Economy (Stanford: Stanford Business Books, 2009), 133.

basic research. Payoffs from basic research may be long-term but could also be widely applicable beyond only the Bell System. As Paul Starr described the situation in his book, *The Creation of the Media*, "In a purely competitive market, AT&T would have been too concerned with its short-term survival to invest in new knowledge potentially convertible into profitable innovations only many years later. Regulation, in contrast, provided a stable environment for recovering long-term investments, and rate-setting agencies typically recognized research as a legitimate capital cost. As a result, AT&T could allocate research costs to its operating companies, which could pass them on to consumers."[210]

Although there were benefits to the regulated monopoly of the Bell System and powerful forces, such as AT&T and the CWA, fighting to continue the status quo, there were also strong voices against it. The proponents of competition fighting against AT&T's proposed legislation were not only consumer advocates and large potential competitors. There were also small businesses seeking opportunities in the manufacturing and supply of telephone equipment. One such company president, Keith Schwayder, had the connections to get a meeting with Carter's staff. Mr. Schwayder was a wealthy Colorado industrialist who had contributed heavily to Democratic campaigns. One of the companies he owned was attempting to grow into a competitor to AT&T and their Western Electric manufacturing unit. He also brought along a lobbyist for the North American Telephone Association, a group of independent telephone equipment manufacturers. Schwayder argued against the Bell Bill citing the values of open competition and referring to Carter's

[210] Paul Starr, *The Creation of the Media* (New York: Basic Books, 2004), 221.

announced position in support of regulatory reform and free market competition. He contended that AT&T arguments of universal service and network harms were groundless.

5.2 Let the Bell Bill Fail

A memo written by Rick Neustadt of Carter's staff described the issues involved. Of interest in this internal memo is the frankness with which Neustadt said that the Bell Bill really had no chance of passage anyway and if anything did happen on the legislative front it would be in the context of a re-write of the Communications Act of 1934, which would take between two and four years to complete. Accordingly, the Administration's position needed to be one in which it could essentially keep from alienating any of the impacted groups, i.e., Democratic supporters such as Schwayder and influential consumer advocates, but also the Communications Workers of America (CWA) union, the traditional rural and lower income base of the Democratic Party, and the business interests of the largest corporation in the world, AT&T. Neustadt ended his memo with this statement, "I think the bill is terrible, but since it is dead for now, I see no point in our getting out in front on it and bringing AT&T and CWA down on our heads."[211]

In a memo, Neustadt had provided a succinct analysis and again related that the bill should not be passed. In three parts, he listed the FCC rulings at question, the AT&T goals in their proposed legislation, and the position of opponents to the Bell Bill.[212]

FCC Decisions permitted the sale of:

1. Phones, switchboards, answering machines, and other equipment which plugs into the network,

[211] Memo, Rick Neustadt to Stu Eizenstat, February 4, 1977, Domestic Policy Staff, Government Reform Neustadt files, Common Carrier Correspondence Folder 6, Box 12, Carter Library.
[212] Memo, Rick Neustadt to Stu Eizenstat, March 7, 1977, Domestic Policy Staff, Government Reform Neustadt files, Common Carrier Correspondence Folder 6, Box 12, Carter Library.

2. Private lines to large businesses, and
3. Computerized telephone services, such as Electronic Funds Transfer.

AT&T sought to maintain their monopoly because:

1. Non-Bell devices will damage the system,
2. Private lines will cause wasteful duplication, and
3. Loss of revenue will require increase rates for residential users, especially in remote expensive-to-serve areas.

Opponents countered:

1. FCC registration of devices can be relied upon to protect the network,
2. Competition leads to minimum prices and maximum innovation,
3. Competition succeeds only where users prefer their offerings which means they are better and not duplicative,
4. It is counter to a free market society for a company to take money from some customers and give it to others.

A strong opponent of the Bell Bill had always been Representative Timothy E. Wirth, a Democrat from Colorado. As a supplement to a summary of testimony before the Communications Subcommittee, circulated by Chairman Van Deerlin, Wirth had submitted into the Congressional record what he called a "very good summary" from a recent article in the magazine *Consumer Reports*. The article provided details of the main points of the proposed legislation and concluded, "In effect, the bill guarantees existing phone companies the monopoly they already enjoy and ensures them a monopoly in future

telecommunications technology. At the same time, the bill weakens or eliminates the very government regulation made necessary by a lack of competition."[213]

Considering the many arguments against the Bell Bill and the general opposition in Congress, it may be surprising there was any continued momentum. There are two likely reasons it continued as long as it did. First, is the powerful lobbying resources of AT&T. Given its size and economic impact, AT&T was able to get the attention of President Carter by actions such as stated in a letter from AT&T Chairman to Carter in which AT&T pledged to support efforts to slow inflation by freezing equipment prices and executive compensation as well as keeping local phone rates low. Carter responded by writing, "I also appreciate the importance you attach to holding down the rate of increase on telephone service charges. This is the most important step your company can take against inflation."[214] This goal seemed to fit into the philosophy that AT&T espoused against competition. The second reason, as described earlier, is the political influence exerted by the CWA.

The combined power of AT&T and the CWA was not enough to carry the day. By the end of 1977, AT&T had recognized the Bell Bill would not succeed and began to seek compromises. On the equipment side, AT&T sought to require at least one telephone instrument be leased from the company to ensure availability of service to users. The computer industry did not agree as they felt it could impede their sales of home computer/telephones terminals. Regarding intercity services, AT&T was willing to

[213] *Congressional Record* vol. 123, daily ed. (January 26, 1977): 11, Domestic Policy Staff, Government Reform Neustadt, Folder 2 Common Carrier – Bell Bill, Box 12, Carter Library.
[214] Letter, Jimmy Carter to John DeButts, April 30, 1978, White House Central Files, AT&T Folder (name file opened upon request July 6, 2010), Carter Library.

concede private lines used within a single company could obtain access to their public network if "access charges" were levied, which provided a fair contribution to subsidize local phone rates. While this was movement on the part of AT&T, it still left a large gap between contending parties.

In 1978, Henry Geller was appointed the first head of the Commerce Department's newly created National Telecommunications and Information Administration. He had served in several capacities at the FCC, including Special Assistant to the FCC Chairman. He also had research experience in Communications Law and Society at the Rand Corporation and the Aspen Institute. Geller played a major role in debates as committees in both the House and Senate considered their next steps.[215] Geller made requests to the Office of Management and Budget in September 1978 for additional staffing required to balance strongly held partisan views in the adversarial process of legislative debate on the revision of the Communications Act of 1934. He stated this issue would be of continuing concern.[216]

5.3 Aftermath of Bell Bill's Demise

Geller was right to anticipate the need and to secure appropriate resources. Congress agreed in early 1979 to begin anew the process of rewriting telecommunications law. Rick Neustadt suggested to Geller there was the potential for a Presidential Message calling on the Congress to act. It was also expected there would be an objection from the Justice Department as the antitrust case against AT&T was dealing with primarily the same

[215] Memo, Rick Neustadt to Stu Eizenstat, December 22, 1977, Domestic Policy Staff, Government Reform Neustadt files, Common Carrier Correspondence Folder 6, Box 12, Carter Library.
[216] National Telecommunications and Information Administration, Budget Estimates Fiscal Year 1980, September 15, 1978, Domestic Policy Staff, Government Reform Neustadt Files, NTIA Folder 3, Box 47, Carter Library.

set of issues. The charge was given to Geller to move rapidly with developing and publicly announcing the administration position. Neustadt went on to write, "It is time to decide what we want to do in late 1979 and 1980. (This may be our last opportunity to put issues on the national agenda if the bad guys win next year.)"[217]

Singer's briefing paper, prepared in September 1976 for Jimmy Carter's first campaign, had correctly highlighted three of the major thrusts of AT&T's legislative initiatives and explained adverse impacts on competitors that would result. The points it made were still relevant in 1979. First, prices would be set based on incremental costs, which advantages the incumbents who already have the embedded investment. Second, states would be given jurisdiction over terminal equipment, which creates a huge obstacle for a new entrant to comply with both the requirements of each local telephone company and the varied requirements of each state in which they sell equipment. The third, and the most challenging proposal would be that in order to grow its network a new carrier would have to prove the following: 1. There would be no increase in local exchange costs, 2. No wasteful duplication of existing lines, and 3. No impairment of the technical integrity and capacity for unified operations of the nationwide network.[218]

It was long recognized that a powerful weapon against competitors in long distance service was control of access to the local network and hence to end user customers. This local network was the domain of the operating companies, primarily AT&T.[219] This was a successful tactic dating back to 1913 and the agreement that resolved the first antitrust

[217] Memo, Neustadt to Geller, May 3, 1979, Domestic Policy Staff, Government Reform Neustadt Files, NTIA Folder 5, Box 47, Carter Library.
[218] Singer, 5.
[219] Gerald W. Brock, *The Telecommunications Industry* (Cambridge: Harvard University Press, 1981), 199.

case against AT&T. While this case imposed forced interconnection with other independent local service providers, it did not apply to interconnection to long distance providers. AT&T repeatedly used its power to avoid long distance interconnection until 1978. On petition by MCI, the court ordered AT&T to interconnect. The FCC took the position that ". . . the introduction of competition stimulated technological change in the telecommunications system, helping to satisfy new business communications markets and realize the latent but unsatisfied demand for existing services."[220]

The policy issue facing Carter's administration was the merits of competition versus the dangers of dismantling a system that had traditionally worked very well. It is not surprising there would be some uncertainty. In addition to incumbent telecommunications operators (Bell and Independents) and influential labor forces, other constituencies who expressed their views in favor of the traditional telecommunications structure included retired pensioners, agencies representing rural areas, and minority groups. Most state commissions also had concerns about impacts of competition; although there were a few that did see potential benefits, i.e. the Colorado Public Utilities Commission.

5.4 Concerns of Influential Groups on Different Sides of the Debate

The Pennsylvania Association of Older Persons stated, ". . . the Telecommunications Industry in the United States has established for industry, labor, small business and the individual consumer, telecommunications service which even its severest critics acknowledge as the finest in the world at the lowest cost to the consumer. During

[220] Davies, 161.

recent years, significant regulatory decisions are threatening to upset balanced universal service at low cost by fragmenting the telephone network into thousands of suppliers seeking to control portions of the telecommunications service. . .”[221]

The American Farm Bureau Federation wrote, “We support the goal of attaining an efficient interstate telephone system that will provide telephone service to rural consumers at a reasonable cost. We oppose policies which erode those revenues that traditionally have contributed to maintaining service at reasonable rates over the entire telephone network.”[222]

The NAACP position was, “. . . nationwide cost averaging and rate integration has provided an equality of service for low income as well as commercial users in both urban and rural areas . . . we call upon the Congress to prevent the extension of unnecessary competition in the areas of terminal equipment and intercity common carrier service.”[223]

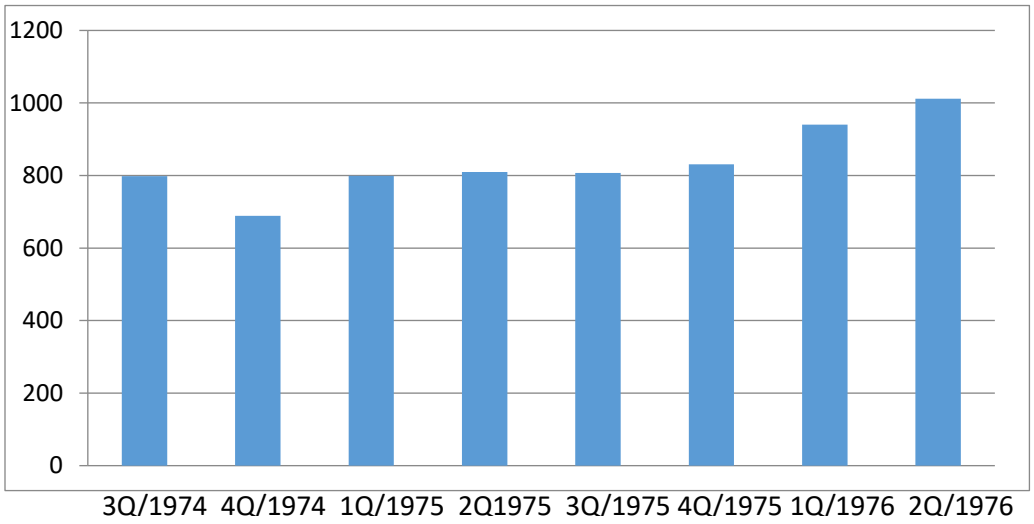
An especially enlightening explanation given by Laurence Singer addresses the convergence of telecommunications and computer technologies and services. After describing the rapid pace of development in telecommunications, the paper made the point that “. . . not only is the telecommunications industry changing at an ever-increasing pace, but so, too is the computer industry. The relationship of these two industries, now already

[221] Pennsylvania Association of Older Persons, Resolution sent to Pennsylvania U.S. Senators and Representative, April 20, 1976, 1976 Campaign, Sam Bleicher's Files, Communications Folder, Box 31, Carter Library.
[222] American Farm Bureau Federation, Resolution, *Rural Electrification and Telephones*, 57th Annual Meeting, January 1976, 1976 Campaign, Sam Bleicher's Files, Communications Folder, Box 31, Carter Library.
[223] National Association for the Advancement of Colored People, Resolution, *Communications*, 69th Annual Convention, July 1978, Domestic Policy Staff, Neustadt Files, Common Carrier Correspondence Folder, Box 12, Carter Library.

affecting one another, presents further complexities."[224] This accurate observation explains why the computer industry was deeply involved and active in promoting the merits of telecommunications competition.

Also, the high level of profits by AT&T had raised continuous concerns among consumer activists from early in the debates. For example, in the third quarter of 1976, AT&T posted record profits and became the first public corporation in the history of the nation to net over $1B in a single three-month period. The Table 4 chart appeared on the front page of the *New York Times*.[225] The impacts of growing profits were damaging to AT&T arguments as competitors seized on these profits to buttress their argument that AT&T should be stripped of its near-monopoly position in telecommunications.

Table 4 – AT&T Quarterly Earnings in Millions of Dollars



[224] Laurence Singer, *Domestic Telecommunications*, 1.
[225] Richard Phalon, "A. T. & T.'s Record Profits Stir Elation and Vexation," *New York Times*, September 20, 1976, 1976 Campaign, Sam Bleicher's Files, Ad Hoc Committee Folder, Box 31, Carter Library.

In addition, consumer activists opposed to AT&T's monopoly status, equally sensitive to the level of AT&T's profits, asserted that the flush of prosperity at the company was just one more sign that rates were too high. The article accompanying the earnings table used this quote, "Ma Bell speaks with a forked tongue," said Marlin Rogol of the consumerist Public Interest Research Group. "At the same time they're saying competition is dangerous, they're reporting the highest profits in history." This view contrasts with Table 3 on page 110 which showed the amount of AT&T's investments and indicated a much a lower rate of return on investment than the computer industry, which was open to competition. When limited to only a view of absolute earnings, without considering investment involved, it does distort the picture. Still, the volume of antitrust suits directed toward AT&T did grow rapidly, and they mostly dealt with AT&T's purchasing and pricing policies. The DOJ's main goal in filing the 1974 antitrust case against AT&T was vertical unbundling by separating Western Electric (the manufacturing subsidiary) from AT&T's services and equipment provisioning units. When more competitors appeared, including MCI and other long-distance services companies, the DOJ expanded its goals to include separation of the BOCs from AT&T's long distance, manufacturing and R&D operations.

5.5 Carter's Goals

There were important concepts embedded in the three stated goals of Carter's 1979 message to Congress. [226] For each goal, it is worthy to explore its origins, conflicts, and impacts to understand the underlying concepts. Doing so also provides an understanding

[226] President Jimmy Carter to Congress, "Presidential Message: Regulatory Reform of the Telecommunications Industry," *U.S. G.P.O*, Series: (96th, 1st. session: 1979), no. 96-192.

of the times, the state of the technology and the importance to society of efforts aimed at telecommunications regulatory reform.

The first goal listed in Carter's message was to eliminate needless regulatory control. There were aspects of deregulation that appealed to each of the political parties. Democrats felt it would be good for consumers by lowering prices of products and services due to simplified rules and less paperwork. Also, Carter especially wanted to lower cost of government at a time when inflation was a major concern. Republicans supported deregulation because they believed a free market environment would enhance innovation and competition and reduce the size and omnipresence of government. The mood of the nation was ripe for such changes after the long period of a growing government influence on citizen's lives stemming from the Great Depression, World War II, the Cold War, Vietnam, and Watergate. During the period of Carter's presence on the national stage, players across a broad spectrum of industry, consumer groups, law, and government took active roles in establishing the context and arguing their positions. Even though the ultimate result of this drama did not materialize until after Carter's departure, it is clear the initiative began during his four-year tenure in office.

Even though the national mood was shifting toward smaller government and less regulation, AT&T continued to argue that a monopoly was necessary. AT&T even backed up their argument with references to the renowned work of Alfred D. Chandler.[227] In his 1977 work, *The Visible Hand*, Chandler stated, "In the creation of the nation's communications network, monopoly rather than oligopoly became the pattern. . . .The

[227] Davies, 49.

speed and volume of messages made possible by the new electric technology forced the building of a carefully defined administrative organization, operated by salaried managers, to coordinate their flow and to maintain and expand transmitting facilities."[228] However, AT&T ignored Chandler's observation that a monopoly was not inevitable. He likely recognized that evolution of technology would make conditions dramatically different from the early years of telephony which he was addressing.

Edward B. Crossland, AT&T senior vice president, tried to paint it as an "either or" issue, "All we're trying to do is get Congress to tell us: 'Which rules do you want us to play this telecommunications game under? Do you want competition, or do you want the rate structure as it is, providing low home phone rates?"[229] This position was a major point of argument by the telephone industry and was stated not only by AT&T but also by independents. An example is a message contained in bill insert to customers of independents. It stated:

> Today we are forced to work in another area to be able to continue providing the service you expect and we wish to provide. Big Government, in the form of the Federal Communications Commission, is experimenting with the world's best telephone system in a way we believe endangers the service you enjoy and the reasonable prices you pay. Impartial studies conducted for USITA show that this "contrived competition" will cause residential and small business telephone

[228] Chandler, 202-203.
[229] *Congressional Quarterly*, "Bell Telephone Presses Case for Monopoly," September 25, 1976, 2615. (copy sent to Bleicher by Richard Drayne of Drayne/Guttenberg, Letter, September 30, 1976, 1976 Campaign, Sam Bleicher's Files, Consumers Folder, Box 31, Carter Library).

customer to pay up to 60 percent more in the next decade as well as threaten the quality of the service.[230]

The incumbent phone companies desired to generate fear among customers over the potential for loss of quality and affordable phone service. Their message was heard and had an impact on users. The long enduring goal of universal service to all customers at affordable prices with the highest possible quality dates to 1907 when Theodore Vail was reappointed as AT&T president. As Mark Clark notes in his *Technology and Culture* article, which reviews Bell Telephone's work on magnetic recording during the World War I era, "To provide universal service at a superior level of quality became AT&T's formula for corporate prosperity."[231]

The incumbent monopoly telephone companies which were not a part of the Bell System belonged to the United States Independent Telephone Association, (USITA). In a lobbying effort in favor of the Bell Bill, USITA had commissioned a study and published the findings in a report labeled, "Economic Impacts on Independent Telephone Companies and Their Customers from Competition in the Supply of Terminal Equipment and Intercity Services." It described the difficulty of meeting competition while also functioning as public utilities under federal and state regulation. The study contended that revenues from basic local service do not cover costs and are subsidized by the services that the FCC had opened to competition. New entrants go after the most profitable customers and do not have the obligation to serve the less profitable ones. The following chart was included to

[230] Frank S. Barnes, "A Message from the President U. S. Independent Telephone Association", 1976, 1976 Campaign, Sam Bleicher's Files, U. S. Independent Telephone Association Folder, Box 31, Carter Library.
[231] Mark Clark, "Suppressing Innovation: Bell Laboratories: and Magnetic Recording," *Technology and Culture* 34, no. 3 (July 1993): 535.

show the revenue losses which the study projected would occur to the independent telephone companies in constant 1974 dollars due to competition.[232]

Table 5 – Projections of Anticipated Revenue Losses of Independents

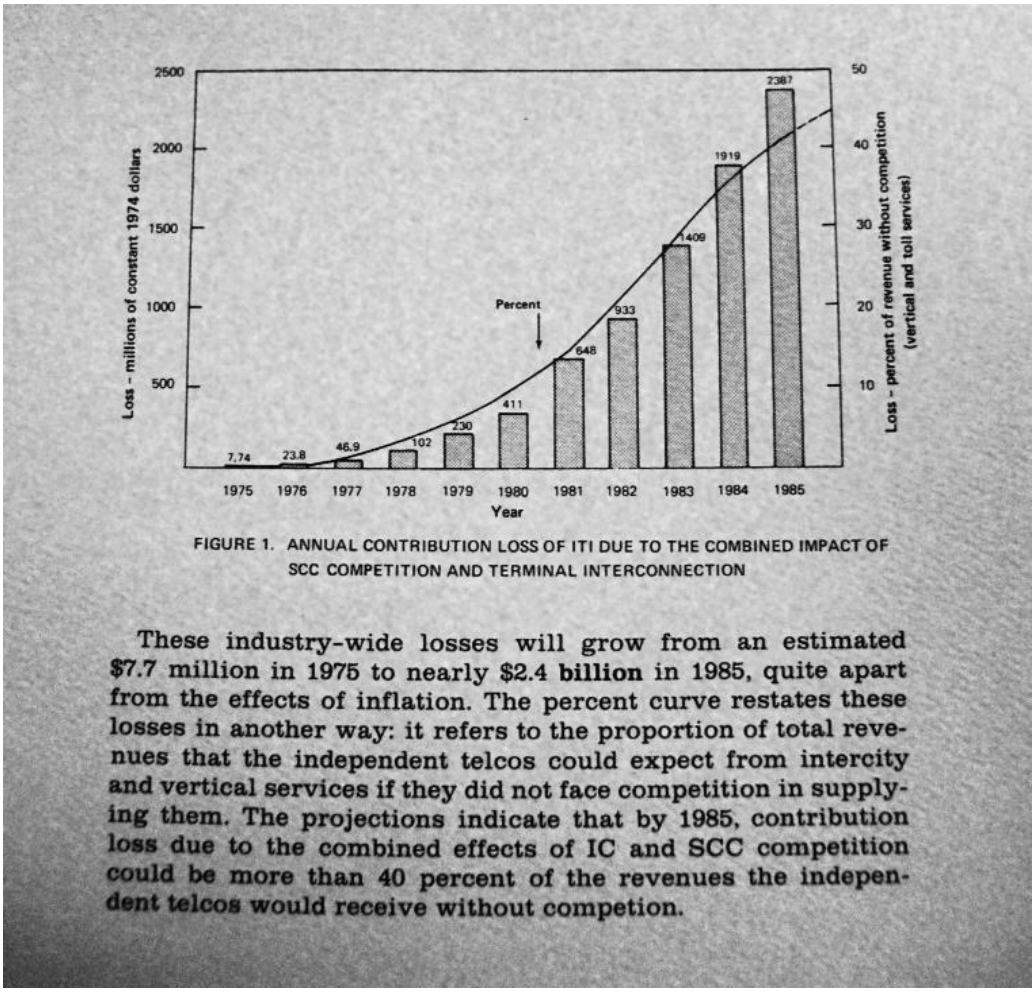


FIGURE 1. ANNUAL CONTRIBUTION LOSS OF ITI DUE TO THE COMBINED IMPACT OF SCC COMPETITION AND TERMINAL INTERCONNECTION

These industry-wide losses will grow from an estimated $7.7 million in 1975 to nearly $2.4 **billion** in 1985, quite apart from the effects of inflation. The percent curve restates these losses in another way: it refers to the proportion of total revenues that the independent telcos could expect from intercity and vertical services if they did not face competition in supplying them. The projections indicate that by 1985, contribution loss due to the combined effects of IC and SCC competition could be more than 40 percent of the revenues the independent telcos would receive without competion.

The impact would be that independent telephone companies would have to raise rates on basic local service to make up for these losses. The study explained that in rural areas costs to provide service is much higher due to distances between customers.

[232] Systems Applications, Study commissioned by United States Independent Telephone Association, January 1976, 1976 Campaign, Sam Bleicher's Files, US Independent Telephone Association Folder, Box 31, Carter Library.

Therefore, those customers would be left to the regulated company with the obligation to serve all customers. When forced to make up revenue losses in denser urban areas, the company would have no choice but to significantly raise rates in rural areas to cover their costs. It predicted a rate increase of 60 percent over the following ten years would be necessary to maintain the financial viability of the independent telephone companies. It ended with this plea, "What is really needed is a comprehensive review by the FCC, Congress, and state regulatory agencies of the roles and responsibilities of the telcos as public utilities and the market conditions that must prevail for them to be able to meet these responsibilities."[233]

The Communications Workers of America (CWA) is the primary union representing the workers in telecommunications. They issued a strongly worded resolution in favor of the Bell Bill. It followed along the same lines of argument as USITA by charging:

> Recent decisions of the Federal Communications Commission encouraging competition in telephone equipment and services, if carried to their logical conclusion, could result in higher rates for local telephone service." The FCC has encouraged "specialized common carriers" to provide competing private line services which, when tied in with the switched network, enable subscribers to virtually duplicate message toll services of telephone companies. Yet telephone companies are being restrained in their efforts to meet this competition. The FCC has also required the interconnection of terminal equipment manufactured by

[233] Ibid.

> unregulated companies to the telephone network, overriding the regulations of state authorities and undermining the end-to-end, system-wide responsibilities of telephone companies for the quality, maintenance, and functioning of telephone equipment. If FCC encouragement of these kinds of competition results in diversion of substantial revenues from telephone companies, rates for remaining services, particularly basic residential services, will have to be raised in order that total system revenues will cover total system costs. If this were to happen, the result would be less business and less employment for telephone companies.[234]

The CWA went on to warn of serious consequences for customers and employees. It also stressed that the telephone was too good to risk damage based only on theoretical but unproven benefits of competition. The union argued it was best to stay with the current model of an integrated system where responsibilities were clear and where revenues from business and long distance services enabled low rates for basic residential service. In effect, this was the long-held belief in the merits of universal service, which had guided the industry since its earliest days and which was codified in the Communications ACT of 1934.

By the time Carter delivered his message to Congress in 1979, there was developing a consensus that changes in the model of regulation were needed. In his message, Carter stated, "FCC and court actions over the last decade opened portions of the industry to competition. Despite these far-reaching developments, the statutory framework has

[234] Communications Workers of America Executive Committee, Current Issues in Telecommunications Policy, March 19, 1976, 1976 Campaign, Sam Bleicher's Files, Consumers Folder, Box 31, Carter Library.

remained unchanged, and regulatory changes have come slowly."[235] While the telephone companies and their advocates wanted to stall competition, Carter wanted to promote it. He felt everyone would benefit from changes in regulation and in his message said, "Outmoded regulatory controls and slow procedures are harming new competitors, established telephone companies, and the users of telephone and other telecommunications services. Regulatory delays and uncertainties discourage firms from entering new markets and offering new services. In a dynamic industry, these delays can mean that the product or service offered is obsolete by the time the regulatory proceeding ends. Innovation is hobbled by uncertainty and by the need to respond to artificial regulatory conditions instead of real consumer demand." He went on to say, "Consumers are the final beneficiaries of competition, through lower prices and wider choices. The competition already allowed in the telecommunications industry is producing benefits. For example, the market for telephone sets and other terminal equipment recently was opened to competition. Consumers now can shop around for good prices, choose from a wide variety of products, and decide whether to buy or lease. Competition is also providing more choices among sophisticated, new services, such as those that combine data processing and transmission."[236]

5.6 Competition Benefits and Reliable/Affordable Service

Regarding telecommunications, the goals in Carter's view were to create a structure to give customers the benefits of competition where it made sense, while still paying attention to the need to keep telephone service reliable and affordable. Carter charged the

[235] President Jimmy Carter to Congress, "Presidential Message: Regulatory Reform of the Telecommunications Industry," *U.S. G.P.O*, Series: (96th, 1st. session: 1979), no. 96-192.
[236] Ibid.

FCC Chairman, Charles Ferris, to work on telecommunications issues while recognizing that, "Competition is a fact of life in this industry. It cannot and should not be rolled back, and we should not allow it to continue developing haphazardly. That approach means delay and uncertainty, and it poses a long-run danger to the health of our telecommunications system."[237]

The FCC did make some changes regarding competition which had the effect of benefitting AT&T in the data market. In a 'tentative decision' released in July of 1979, the FCC said it would 'adopt a flexible regulatory scheme.' This scheme would allow common carriers to set up separate subsidiaries to sell de-tariffed enhanced 'non-voice' services. This meant AT&T could provide data processing through a subsidiary. AT&T Vice Chairman James E. Olson cautiously noted that "controversy seems to be giving way to consensus on telecommunications legislation, helped in large part by President Carter's call for action."[238]

Carter also acknowledged, "But, FCC attention is not enough. Changes in the law are also needed. To this end, I urge Congress to press ahead with a bill that incorporates: encouraging competition wherever it is workable and eliminating needless regulation. Deregulation makes sense for competitive markets, such as terminal equipment, and for small firms that cannot dominate markets. Many communications and equipment offerings should be deregulated now, and legislation is needed to avoid endless litigation over the FCC's authority to do so. Of course, some communications markets, such as the local

[237] Ibid.
[238] 1979 Bell Telephone Magazine, Publication of AT&T, September 1979 edition.

exchange, may remain regulated monopolies indefinitely."[239] (That has not proven to be the case since all of telecommunications is now open to competition.)

Carter noted there had been a major paradigm shift, "The line between telecommunications and data processing has become blurred; new equipment and services involve both. Existing controls based on this distinction have produced years of regulatory proceedings and are delaying the use of new technologies."[240] He discussed subsidies by Long Distance to Local Service, "Universal availability of basic telephone service at affordable rates must be maintained. Overall long-distance revenues currently contribute to keeping some local and toll rates affordable. This is done through complex accounting processes largely determined by the telephone industry. Because of the developments of the last decade, this system is in trouble. The industry is considering changing it in order to match the new competitors' rates, and that could mean significant rate increases in some rural areas."[241] The lobby for rural interests was very pleased by his comments that, "The legislation should provide for a charge on all long-distance services—including those of the new competitors—which use local exchanges. This "access charge" would cover the actual cost of using local facilities, provide support for local service, and finance protection for rural residents against large toll rate increases."[242]

An argument frequently used by the telephone companies was the potential for the complicated nationwide network to be harmed by outside companies. That argument was based on having trillions of working parts in the nationwide system which had to be

[239] President Jimmy Carter to Congress, "Presidential Message: Regulatory Reform of the Telecommunications Industry," *U.S. G.P.O*, Series: (96th, 1st. session: 1979), no. 96-192.
[240] Ibid.
[241] Ibid.
[242] Ibid.

compatible. Their contention was that the only way to ensure integrity and functionality was to have the telephone company supply and control the devices in and connected to the network. Carter recognized their points and acknowledged that "Telecommunications is crucial to our society. The availability of nationwide, high-quality communications is vital to the economy, national security, and the quality of our lives." But, he also believed that competition in place thus far had paid off, "Sophisticated new communications systems are providing better services, lower costs, and improved productivity in an economy that depends more and more on information transfers."[243]

5.7 Carter's Position Increasingly Focuses on Customer Benefits

Even though he continued to acknowledge the importance of the telecommunication industry, as he neared the end of his firm term and prepared to campaign for re-election, Carter's message became much more aggressive in favor of consumer interests. During his first campaign, at the Ralph Nader forum, Carter had admitted not knowing much about the consumer impacts of telephone regulatory reform. By the time of his 1979 message to Congress, he actively sought consumer involvement. In that message, he said, "Public participation in regulatory decision-making should be encouraged. Effective participation by the users of telecommunications services will help the FCC and state regulators make their difficult decisions. Such involvement should be encouraged through open proceedings and by providing funding for groups that could not otherwise afford to participate and that represent an important interest that would not otherwise be heard."[244] It is clear that Carter was walking a fine line whereby he might

[243] Ibid.
[244] Ibid.

attract the votes of telecommunications users and possible competitors while not overly alienating the many employees of the BOCs and other non-Bell monopoly telephone companies.

As mentioned earlier, those touting the benefits of competition included a few of the State Commissions, such as the Colorado Public Utilities Commission. That commission rejected a proposed Mountain Bell Telephone Company tariff filing as being non-compensatory and in violation of anti-trust laws. They also ordered Bell to inform all customers who had signed leases for equipment that they could terminate their contracts at any time without penalty.[245]

Even though any prospect of success was diminishing, AT&T continued to hold firm to their message by insisting that technological advances had not negated the value of a unified network owned, planned and operated by one company. Thomas P. Hughes accepted the impact of a technological structure on organizational form, but he believed that the technological system can be reciprocally influenced by various forces. Hughes stated, "…change involves consideration of many fields of human activity, including the technical, the scientific, the economic, the political and the organizational."[246] This type of logic was growing in its influence. It reinforced the belief that a policy decision to alter the organizational structure of the Telecommunications industry would result in technological adaptation to the new (i.e., competitive) business model.

[245] North American Telephone Association, *New Release-Colorado PUC Takes Stand Favoring Bell Competitors*, April 24, 1976, Domestic Policy Staff, Government Reform Neustadt, Folder 2 Common Carrier – Bell Bill, Box 12, Carter Library.
[246] Thomas P. Hughes, *Networks of Power* (Baltimore: Johns Hopkins University Press, 1983), 2.

CHAPTER 6. DIVESTITURE AND ITS REPERCUSSIONS

This chapter reviews the final steps in the process leading to the break-up of the Bell System. The subsequent actions that were required to implement the government ruling are described. In 1982, after eight years of negotiations, AT&T agreed under court order to divest the Bell Operating Companies (BOCs) effective on January 8, 1984. On that date, seven new Regional Bell Operating Companies (RBOCs) were formed.

The basic theory was that competition had developed in long distance and equipment markets, and one competitor (AT&T) should not control the "bottleneck" of the local networks. From the perspective of AT&T, it has been argued they opportunistically agreed to divest the slow-growth local exchanges for the right to keep manufacturing and to enter high growth computer and information markets.[247] Ironically, the opposite would occur. This was due in part to subsequent governmental decisions, but also because of a changing industry environment and evolution of the technology.

6.1 Federal Political Roles

Christopher Sterling identifies the key decade of telecom deregulation to be 1974-84. He states that legal and regulatory battles in this period managed to ". . . redefine the shape of American telecommunications—with ramifications still being worked out early in the 21st century. . .. the unified and long-dominant Bell System would cease to exist, creating a wholly different industry structure."[248] It is important to note that the Carter presidency (1977-81) is central to this period. More than just a temporal placeholder in the

[247] Paul Teske, After Divestiture: The Political Economy of State Telecommunications Regulation (Albany: State University of New York Press, 1990), 6.
[248] Christopher H. Sterling, *Shaping American Telecommunications* (Mahwah, NJ: Lawrence Erlbaum Associates, 2006), 145.

process, the Carter years quickened the pace of deregulation of the telecommunications industry in favor of competition.

However, even though Jimmy Carter had a major impact on telecommunications, Ronald Reagan is still the president who typically gets the most attention for his crusade to stem the overall tide of big government, including regulation of telecommunications. This is reflected in an article and editorial cartoon in *Regulation Magazine* that credits Reagan with success in his first year by writing, ". . . the administration's record has been far better than that of any other administration, even allowing for the fact that it has had more to deregulate than any other." Christopher DeMuth, Reagan's administrator of information and regulatory affairs and executive director of the Presidential Task Force on Regulatory Relief, wrote the article. Though he was hardly an unbiased source, the following editorial cartoon from the United Feature Syndicate, which DeMuth included in the article, did reflect the generally accepted view.[249]

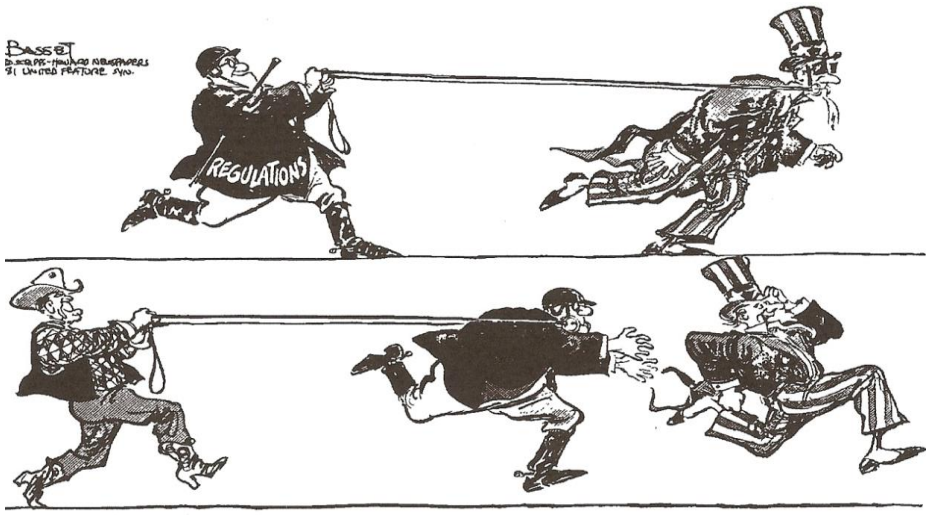


Figure 5 – Reagan and Regulatory Reform

[249] Christopher C. DeMuth, "A Strong Beginning on Reform," *Regulation Magazine*. Vol. 6, No. 1 (January/February 1982) The Cato Institute, Washington. 15-18.

The message of this cartoon was that Reagan changed the model from one where regulation was holding back the progress of the United States to one where he held back regulation and enabled the economy to advance. While this has been a common view, it should be remembered that Carter also made significant progress, albeit not as well recognized. The settlement of the AT&T case was a major example of the deregulation movement. It was finalized at the very beginning of Reagan's tenure and therefore credit for it should rightly be assigned to Carter. Still, it is ironic that with all the discussion about the role of the FCC and about the need for Congress to rewrite the applicable laws, the matter was ultimately decided not by the executive nor the legislative branch of government. The bills died at the end of the 96th Congress in December 1980, concurrent with the end of Carter's presidency. In the Senate, committee leaderships passed from the Democrats to the Republicans; in the House, the failure of Representative Van Deerlin to be re-elected meant a change in the influential Communications Subcommittee.

6.2 Judicial Control and Decision

Judge Harold Greene, who had assumed control and consolidation of the various antitrust suits against AT&T in 1978, had initially set 1980 as the target date to reach a judgment. The resources available to the DOJ were far less than what AT&T could spend. In 1979 alone, AT&T spent $100 million on its defense.

Another tactic of AT&T was to mobilize the power of its one million employees by suggesting they participate in a letter writing campaign to their congressional representatives. The company provided employees with arguments to use against the antitrust action and in favor of maintaining the Bell System as it was. Corporate headquarters heavily promoted this campaign and even handed out coffee cups with the

Bell logo and the slogan, "The System is the Solution." Edicts went to subsidiary companies instructing them to conduct similar campaigns at all levels. Shareholders and suppliers also received requests to support this cause of the status quo.

In 1980, there were extensive advertising campaigns in print and television touting the value of the Bell System which had built and operated the best telecommunications system in the world. The message was that government efforts to break apart this valuable national asset were counter to the public interest. Since residential customers were largely satisfied with their service, the message of the ads sounded reasonable. Letters flooded into Washington. Ironically, the political pressure of such a media blitz was counterproductive to the company's objectives as it reinforced concerns by governmental policy-makers about the power of AT&T. In addition, it further irritated those who felt the company took the arrogant position that they knew what was best for the public. Temin makes this statement, "In fact, from a political point of view, AT&T was too big. It had grown rapidly in the 1960s and 1970s and appeared to have overwhelming power, equal almost to that of the federal government. . .. Although no one in power ever said so, the United States found it difficult to tolerate any company quite as large and omnipresent as the old AT&T."[250] Not to diminish the significance of the deregulation movement and competitive open market goals, which were valid drivers for change, the AT&T mentality as exemplified by the ad campaign may indeed be an overarching reason why this break-up attempt succeeded. It is a factor whose origin AT&T could not blame on any party, other than itself.

[250] Ibid., 342.

Sentiment of the federal government and the weight of evidence was against AT&T and in January 1982 a "consent decree" was announced which broke apart the Bell System. The challenges were complex and negotiations among many actors were undertaken. Other than AT&T headquarters, the DOJ, and Judge Greene, the other involved parties included the FCC, Congress, State Utility Commissions, current and future competitors, independent telephone companies, customer advocacy groups, and standards bodies. Often understated in historical accounts was the role of the BOCs, who were organized into seven RBOCs as of the effective date of the divestiture on January 1, 1984. Following are the before and after views.[251]

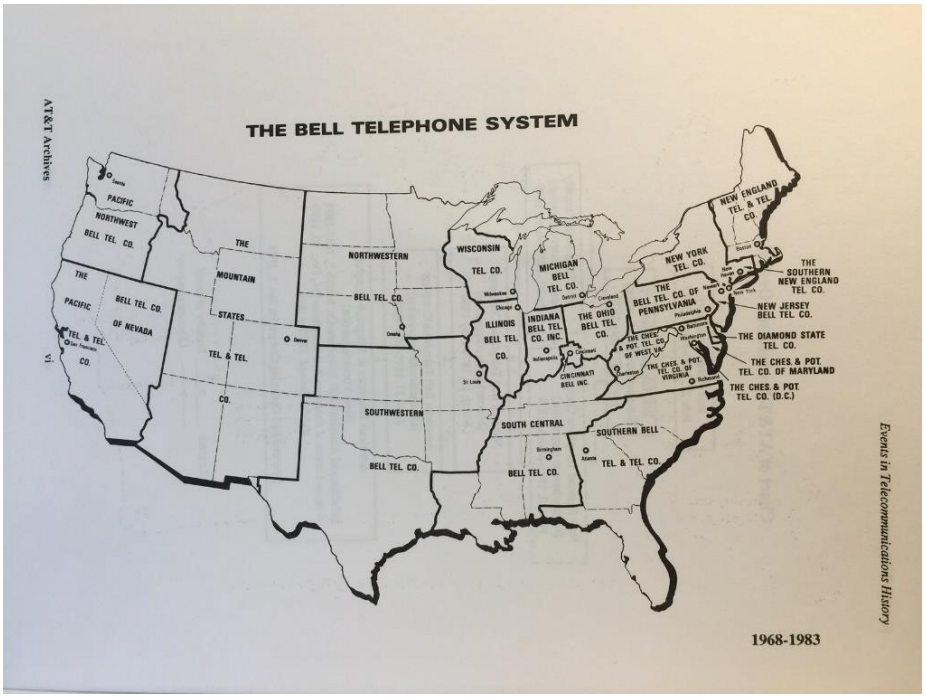


Figure 6 – BOCs Before Divestiture

[251] AT&T Headquarters, "Events in Telecommunications History," AT&T Archives, Warren, NJ, 1984, vi-vii.

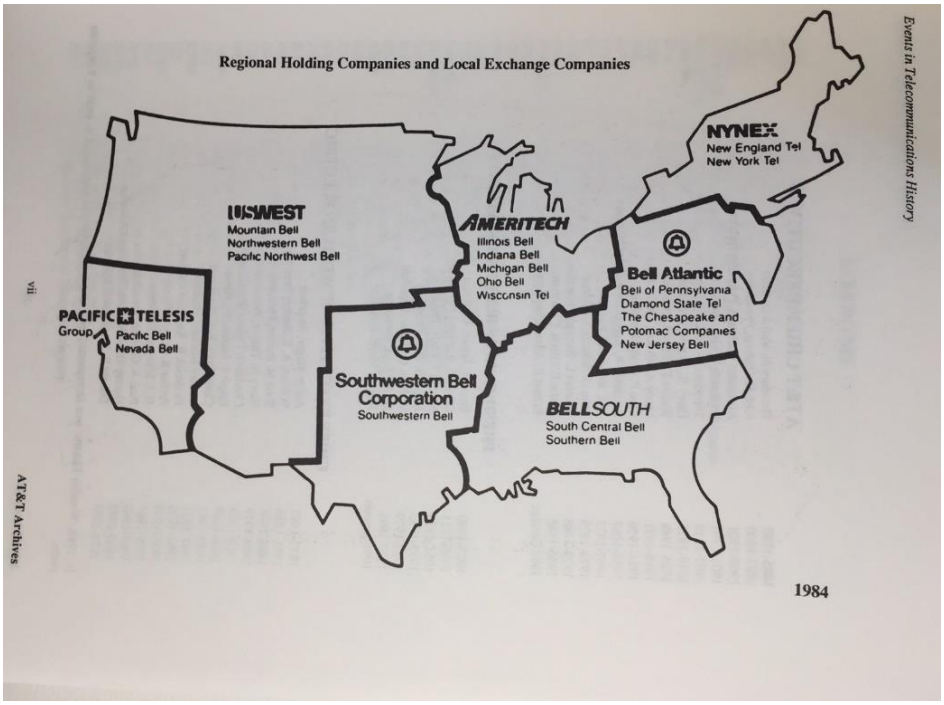


Figure 7 – RBOCs After Divestiture

6.3 Impacts on RBOC Employees

Employees of the RBOCs were faced with many uncertainties and challenges. It was totally uncharted territory for those who had felt safe and comfortable within the large and stable organization. Marvin Thomason had held the position of District Manager for Installation and maintenance in the Wichita Falls, Texas district of Southwestern Bell Telephone since 1979. This territory covered a large and mostly rural area north and west of Ft. Worth up to the Oklahoma border. Change there had always been slow to happen. Thomason said, "I really wasn't concerned about divestiture other than whether or not the large business portion of my operations was going to go to AT&T or stay with me. We were just basically focused on running the day to operations."[252] But, his world did change

[252] Marvin Thomason, District Manager at Southwestern Bell Telephone prior to divestiture, Interview by the author, April 10, 2017.

dramatically after divestiture was announced. He described how there was a request for managers who would be interested in positions created by the need to assume responsibilities previously handled by AT&T which now would be left to each RBOC. Thomason recalled, "I responded that I was interested. I had been in Wichita Falls for 4 years and the district was performing well. I thought a new opportunity with more exposure would be good for my career. I was offered and took a job in the new State Regulatory Group at Southwestern Bell Headquarters in St. Louis. After that, I was involved with the issues that divestiture created as they related to our costs which were allowed or not allowed by our regulators in setting our customer prices."[253]

While Thomason did not anticipate great changes, he found himself dealing with an enormous upheaval requiring creative thinking and very hard work. His experience is typical of what many other employees faced. They were required to resolve the structure of the local service areas, institute access tariffs for long distance carriers, and implement a plan for access to their local network. In the divestiture decree, the RBOCs were also charged to create a centralized staff to perform national security functions and to provide an alternative to the technology development and implementation support previously provided to the operating companies by Bells Labs and funded by the parent, AT&T.

A major concern of the RBOCs after divestiture continued to be the provision of universal service in the aftermath of divestiture. They contended that everyone who needed phone service should be able to get it at reasonable rates. Their proposed solution was that the FCC should mandate collection of contributions from all customers with a particular

[253] Ibid.

focus on urban and large business users who were viewed as the most likely to bypass the RBOCs. These funds would be used to subsidize the high-cost customers, for whom this was referred to as "lifeline service." John Hayes, Vice President – Revenues and Public Affairs for the Southwestern RBOC, described this concept as a high-cost pool in a speech at a Texas/Oklahoma Telephone Convention, "The pool is an efficient and appropriate way of supporting exchange service in high-cost areas. Because we all do business in the wide-open spaces of Texas and Oklahoma, I'm sure we all share an insider's appreciation for what we mean when we say high-cost areas."[254] Hayes was referring to the fact that in rural areas the cost was much higher to provide service and those customers had the need but not the ability to pay the high price which would make the service profitable. As noted by Joe Villarreal, who worked in the Texas accounting organization at the time, "It was true that new entrants would not go into high-cost rural areas, but would rather serve the lower cost urban residential and business customers. We thought it was only fair that new entrants should collect from their customers and pay into a pool to subsidize service to high-cost areas. Otherwise, it would mean our prices would have to go up to stay profitable. Frankly, we really thought it was unlikely those new players would ever be required to pay their share. It concerned us very much."[255]

The same concerns which Villarreal expressed were felt not only in accounting and finance organizations but within other groups and across all levels of management. Other functions such as marketing, sales, network planning, operations and certainly regulatory worried about impacts on the company, their organizations, and their jobs. These

[254] Southwestern Bell Telephone, "Management Report," October 3, 1984, Record Group 5: Box 18, Collection No. 2: SBC Communications, AT&T Archives and History Center, San Antonio, Texas.
[255] Joe Villarreal, Formerly a Finance Director at Southwestern Bell in Texas, interview conducted by the author, April 7, 2017.

uncertainties were well founded because while requirements for small collections were set by the FCC in 1984, it was not until the 1996 Telecommunications Act that all the regulations were finalized. Included in that act was the establishment of a Universal Service Fund. It required all telecommunications companies, new entrants, and the RBOCs, to contribute to a fund which would guarantee lifeline service to all high-cost areas.

RBOCs also continued to attempt to compete in the enterprise CPE market. But they were required to provide CPE only through an "arm's length" subsidiary, which was not permitted to interface with the other units of their RBOC. They apparently recognized the challenge, but continued anyway, as was stated in a Management Report to employees of Southwestern Bell, "According to industry analysts, all seven regional companies realized last year that their respective customer premises equipment subsidiaries represented a long-term investment, rather than a short-term profit center. Few expected CPE to be profitable in 1984."[256] That comment was a significant understatement since they never did recover a profitable position.

The post-divestiture responsibilities of the RBOCs expanded through growth in the market as well as other court decisions moving businesses from the legacy AT&T into the RBOCs. They also became active lobbying in Washington for changes in the laws governing telecommunications. The culmination of this effort was the passage of the Telecommunications Act of 1996[257] which completed the opening of competition in most aspects of the telephone business. The 1996 Act had multiple sections which dealt with

[256] Southwestern Bell, "Management Report," January 8, 1985, Record Group 5: Box 18, Collection No. 2: SBC Communications, AT&T Archives and History Center, San Antonio, Texas.
[257] "Telecommunications Act of 1996", Pub. LA. No. 104-104, 110 Stat. 56, 1996.

areas other than only the telephone industry. These included digital TV via over-the-air broadcasts as well as by the growing TV cable industry. These topics are beyond the scope of this study.

6.4 The Telecommunications Act of 1996

The Telecommunication Act of 1996 was necessary to clarify issues and make adjustments in the impacts of the antitrust ruling. It was signed into law by President Bill Clinton on February 8, 1996. He brought with him to the signing the same pen which President Eisenhower had used to sign the 1957 Interstate Highway Act. It was Albert Gore, Sr., the father of then Vice President Albert Gore, Jr., who had written the 1957 Act. Vice President Albert Gore, Jr. was a major impetus behind what he called the Information Super Highway, thus the symbolism of the Eisenhower pen.[258] When signing the Act, President Clinton said, "Today, with the stroke of a pen, our laws will catch up with the future."[259] The vision of those involved in developing the new law was that it would knock down any remaining regulatory barriers and open up local telephone service, long-distance service, and cable television to competition for the good of the customers. With an optimistic tone, the co-director of Consumers Union, Gene Kimmelman, said, "This bill went from being a consumer nightmare to being something that while it still has significant risks is dramatically improved and offers at least hope of greater competition and lower prices."[260]

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[258] Richard G. Tomlinson, Tele-revolution: Telephone Competition at the Speed of Light: A History of the Creation of a Competitive Local Telephone Industry 1984-2000 (Rockport, ME: Penobscot Press, 2000)
[259] Edmund Andrews, "Communications Bill Signed, And the Battles Begin Anew," *New York Times*, February 8, 1996, late edition. http://www.nytimes.com/learning/general/onthisday/big/0208.html#article, accessed September 27, 2016.
[260] Ibid.

A key consideration with open competition was the specter of maintaining Universal Service. It continued to be a focal point for government authorities as well as for the BOCs and their new competitors. The policy dialog revolved around four questions:[261]

1. How much does the universal service obligation of incumbent telephone companies add to their operating costs?
2. How should those costs be financed in a competitive environment?
3. What technical and pricing arrangements should be made to enable interconnection of incumbent telephone companies with competing networks in order to maintain complete connectivity of users?
4. Should "Universal Service" be redefined to include new technologies and services and, if so, how should it be done?

The Telecommunications Act of 1996 was the first comprehensive revision of the Communications Act of 1934. Rather than replacing, it was integrated into the 1934 Act. It culminated twenty years of legislative struggle over how to adapt the federal law to the new realities of telecommunications. According to a committee report accompanying the draft bill, a goal was to clearly articulate the policy of Congress that universal service was a cornerstone of our nation's communications system. The intent was to make explicit the authority of the FCC and the States to require common carriers to provide universal service.[262]

[261] Mueller, 165-191.
[262] Lawerence Pressler. "Committee Report on the Telecommunications Competition and Deregulation Act" (Chairman of Senate Committee on Commerce, Science, and Transportation) March 28, 1995.

The language of the Act makes it clear that universal service was no longer confined to only traditional telephone service. The definition must take into account advances in telecommunications and information technologies. It was defined to include services considered essential to education, public health, or public safety. In addition, they must be deployed in public telecommunications networks by telecommunications carriers and be consistent with public interest, convenience, and necessity. The FCC would be required to include any conforming service to which a substantial majority of residential customers subscribed and it must revise and update the definition periodically.[263]

Further, the law specifically provided that "quality services should be available at just, reasonable, and affordable rates."[264] This requirement meant the FCC would need to decide what is "affordable" and arrange to subsidize any providers whose costs of providing the designated service exceeded the affordability target, including geographic areas where conditions made service more expensive to provide. This contrasts with the prior rate of return regulation which was based on a fair return on investment and not on what was appropriate for particular users. In order to comply with this new definition, all telecommunications providers of interstate services were required to make financial contributions to a fund for the services defined as universal.

The Telecommunications Act of 1996 destroyed the legal basis for protected monopolies in telecommunications and assured the right of entry for entrepreneurs. But, it also provided some areas of negotiation and of comfort for the old-line incumbent RBOCs, such as the universal service fund and the right to enter unencumbered into

[263] Mueller.
[264] Telecommunications Act of 1996, Pub. LA. No. 104-104, 110 Stat. 56 (1996)

previously restricted areas like interstate transport, intelligent CPE, and television. Even so, it firmly established that as the country moved further into the new Information Age a competitive environment was equated with the public interest, was convenient, was a necessity and was facilitated by deregulation.

6.5 Importance and Challenges of Standards in a Fragmented Structure

Table 6 shows the position of the United States compared to other nations in terms of the percent of their investments which were allocated to Information and Communications Technologies (ICT) in the later years of the 20th Century. ICT was comprised of three components: information technology equipment (computers and related hardware), communications equipment, and software. Software included the acquisition of prepackaged software, customized software, and software developed in-house. ICT was critical to the leadership position of the United States and with the break-up of the Bell System plus new competitors the challenges of setting standards and their importance to the industry became much greater.

Table 6 – Spending on Information and Communications Technologies.[265]

Location ▾ ()	1985 ()	1986 ()	1987 ()	1988 ()	1989 ()	1990 ()	1991 ()	1992 ()	1993 ()	1994 ()	1995 ()	1996 ()
United States	21.5	22.6	22.9	23.4	24.1	23.8	25.4	26.9	26.8	26.6	27.2	27.8
United Kingdom	13.9	15.6	15.8	15.9	16.2	15.9	18.2	18.5	19.1	20.8	23.0	25.1
Sweden	15.0	15.4	15.8	16.5	15.5	15.2	16.8	19.8	26.4	25.5	24.8	24.1
Australia	12.5	13.9	14.1	14.3	15.3	16.2	18.1	19.5	18.9	18.2	18.5	19.2
New Zealand	13.3	15.6	14.9	16.3	18.5	20.5	22.5	22.1	19.7	19.9	18.9	18.9
Denmark	20.8	19.9	20.8	16.0	17.2	17.8	18.3	18.4	21.3	21.3	19.7	18.5
Canada	11.1	11.5	12.5	12.4	12.6	13.2	14.2	16.1	16.9	16.4	16.8	18.0
Netherlands	12.1	12.3	12.9	13.5	14.6	14.7	15.3	15.1	15.7	16.4	15.7	16.4
France	12.2	12.4	12.7	12.6	12.6	11.9	11.5	11.8	12.5	13.1	13.9	15.5
Switzerland	13.5	13.7	13.6	13.7	13.5	13.5	13.3	13.8	14.7	15.3	14.0	14.6
Spain	14.0	14.6	15.2	15.1	14.6	13.7	12.5	11.6	12.6	12.9	12.5	14.6
Germany	13.3	13.1	13.4	13.7	13.8	14.0	13.8	13.1	13.2	13.0	13.3	14.1
Italy	10.7	11.6	12.2	12.6	12.3	12.2	12.2	12.5	12.9	13.5	13.0	13.7
Finland	2.8	3.4	3.6	3.8	3.9	4.9	6.5	8.9	12.3	14.8	17.3	12.9
Japan	7.4	7.9	8.4	9.0	9.4	9.1	9.3	9.4	9.5	9.5	10.6	12.6
Ireland	6.6	5.8	6.1	7.7	7.4	6.1	6.6	6.6	6.9	7.6	11.1	12.1
Austria	9.2	8.9	8.6	9.8	9.7	9.8	10.2	10.0	10.2	10.8	11.3	10.8
Korea	9.4	9.2	10.0	9.4	8.9	8.4	7.5	7.3	7.2	7.7	9.3	10.0

Another, somewhat contradictory, estimate was that between 1986 and 1992, about half of United States corporations' investments went into information technologies and telecommunications equipment.[266] The degree of variation between the two sources illustrates that measurements are difficult to capture. What is clear though is the importance of these technologies and the strong position of the United States relative to other countries. Because of this, it was critical that any governmental actions would not damage but instead would help to ensure a continued strong position.

[265] Organization for Economic Co-operation and Development, OECD (2016), ICT investment (indicator). doi: 10.1787/b23ec1da-en (Accessed on 16 November 2016)

[266] Jerry A. Hausman, "Proliferation of Networks in Telecommunications: Technological and Economic Considerations," in Networks, Infrastructure, and the New Task for Regulation, ed. Werner Sichel and Donald L. Alexander (Ann Arbor: University of Michigan Press, 1996), 22-23.

In addition, for such a complex, interconnected and interdependent system as the ICT network, it was essential that all players participate in and adhere to standards. A standard is an agreement that provides a common reference for all concerned parties. It is critical there be no neglect towards the complexities surrounding standards. This is even more true in the realm of the converging telecommunications and information technologies than it is in many other fields. Solving problems necessitates intensive attention to details as described in the following statement, "A solution requires that all the elements of basic telephony, data processing, all varieties of hardware, and their content formats for input, output, transmission, storage, and processing be in perfect harmony. Once assembled, the end-to-end system's performance must satisfy the sense of urgency of those who use it. Accordingly, standards for interoperability are essential, and the participation of suppliers and end users in standards-setting movements is a critical success factor."[267]

Consensus standards are recognized by telecommunications companies and by governmental agencies as essential to preserving the integrity of nationwide telecommunications and enabling the interconnection and interoperability of equipment and services. Examples of telecommunication standards are interface protocols, numbering plans, circuit noise limits, and electrical interface specifications. These standards benefit equipment manufacturers, telecommunications operating companies and consumers. The obvious aspect is the ability to make telecommunications connections worldwide. Also, important though is that with an accepted standard a manufacturer can expand its market, both nationally and internationally and achieve benefits from economies

[267] Harvey L. Poppel and Bernard Goldstein, *Information Technology Standardization: The Trillion-Dollar Opportunity* (New York: McGraw-Hill, 1987), 6.

of scale. Lastly, and very important, a consumer has a broader range of choices and can base purchasing decisions on a supplier's performance, price, and features rather than only its compatibility with unique interfaces and services.

As addressed by Andrew L. Russell in his book, *Open Standards and the Digital Age,* the story of communications standards is, ". . . in effect, the convergence of two stories: the history of communication networks and the history of a collaborative form of consensus standardization. The two stories do not share the origins; indeed, they converge fully only in the last decades of the twentieth century, when consensus standards were recast as open standards." Russell describes the convergence as more than a history of the Internet, although he concedes that was a key component. His view appropriately takes into account political, technical and cultural diversity within the broader scope of the history of networking. Further, Russell states, it is not only an American story as principles of openness and consensus have international aspects and global consequences. While Russell certainly has a valid point and the global community did have great influence, a somewhat counter-view rests on the pre-divestiture power and worldwide influence of the Bell System.

Prior to January 1, 1984, most standards for the telecommunication industry, domestic and international, were established simply by the ability of AT&T, through consultation with their BOC's, to create system-wide standards. With occasional modification, these standards achieved universal adoption by alternative providers in the name of compatibility and because they lacked the resources to develop, debate and replace the AT&T proposed standards. The quality of service under this process was generally good although some erosion had occurred beginning with the entrance of MCI, Carterfone

and multiple other providers of services and CPE. But compatibility issues accelerated enormously with the divestiture of the BOCs from AT&T and the opening of the industry to many more new equipment and service providers.

The new RBOCs recognized this change and attempted to characterize it as both a challenge and an opportunity. As an example, the Southwestern RBOC's stated position was that as a service provider, it sought to offer high-quality services with multiple vendor equipment which interconnected seamlessly with the worldwide telecommunications network. As a user of telecommunications components, it sought to purchase products with the best features and performance at the most reasonable cost. The most important benefits of standards it identified were to: minimize capital costs, increase flexibility, strengthen the quality of service, and maximize legal protection. The Southwestern RBOC accepted that its role was to contribute toward standards which were useful to the company and the industry at large.[268]

The telephone system is a large network of many components and for it to function requires interface standards in a similar manner to other large networks such as railroads or power utilities. Hence, for a customer to place their owned equipment on their premises required a standard interface to the telecom system. This began with voice telephone sets and went on through data modems for computer access and complicated high capacity multichannel data communications. Transport facilities went from a single path on a copper pair of wires to high capacity fiber. It also was required for network switching nodes to be able to send traffic to others systems, including those of competitors. Transport

[268] Southwestern Bell Technology Resources, *The Southwestern Bell Standards Handbook* (St. Louis, 1992), 1-2.

went from copper wires to analog carriers, then digital carriers and then packet switching. The packet switching mode directed traffic using individual packets of data with each one containing inside the packet not only the information to be delivered but also the "to and from" addresses. In the communications network, a dedicated link between two points was replaced by a virtual link. Communications were divided into these packets which could be sent via different routes and then reassembled at the destination. There was the requirement to establish standards so that multiple telecommunications companies could interface their systems, multiple providers could manufacture and install the equipment and multiple end users could connect and operate their voice and data CPE.

Telecommunications standards are the underlying "laws" that govern the Global Information Highway. Telecommunications networks in every country in the world utilize formal standards to physically interwork. Without public agreements and the telecommunications standards that codify such agreements, wide-area voice and data communications would not be possible. The American National Standards Institute (ANSI) and the Telecommunications Industry Association (TIA) negotiate proposals within the United States. These are then addressed at the international level by the International Telecommunications Union (ITU).[269]

The International Telecommunications Union is a treaty organization of the United Nations which has individual countries as members. It is the oldest telecommunications standards organization, dating back to 1865. It recently adopted the name ITU as the name of its standards work, replacing the name International Telegraph and Telephone

[269] International Telecommunication Union. (1999). *Annual report*. Geneva.

Consultative Committee (in French the acronym was CCITT). The standards work in the ITU is divided into two sections, ITU-Telecommunications (ITU-T) and ITU-Radio communications (ITU-R). Each section is organized into Study Groups. Study Groups are divided into Working Parties, and then further divided into Question Sessions. The work in a Question Session is led by a Rapporteur (French word meaning facilitator). These working meetings are termed Rapporteur meetings.

The TIA is the formal organization responsible for the standards of the telecommunications equipment within the United States. Completing the picture of formal telecommunications standards committees in the United States is the Alliance for Telecommunications Industry Solutions (ATIS). It is the lower layer of the formal organizations responsible for the telecommunications network standards.

In summary, TIA develops the national standards in the United States for the equipment that connects to the telecommunications network and ATIS T1 develops the US national telecommunications standards for the network to which the equipment attaches. Work from both these organizations is passed, via the US State Department (as the representative of the USA) to the ITU where worldwide telecommunications standards are defined (by bringing together national standards work from many countries). There are also other groups in the complex process of telecommunications standards.

It should be noted that technological innovation has been in large part facilitated by standards work which enabled multiple vendors to design equipment without artificial and expensive interface devices. As described earlier, AT&T and Bell Labs previously had developed standards with little or no outside contributions. The future would bring an

enormous change to how the telephone system would be designed and operated. Joe McMonagle had network planning and operations responsibilities and lived through this transition while working intensively with various departments of each of the newly created RBOCs, multiple suppliers, and competitors as well as many large customers. His charge was a key part of the effort to keep the United States communications services working well. He described a key challenge they faced within standards bodies, "As new technology developed utilizing semiconductors, integrated circuits and stored program control memory, more and larger companies saw the business opportunities and demanded to participate in the standards arena. In addition, with the breakup of the Bell System, seven new companies (the RBOCs) began to actively participate in setting standards. Initially they worked together, but eventually, they started going down different paths further complicating the standards process."[270] As noted by Phyllis Anderson, a member of the standards group in one of the RBOCs, "The process of reaching agreements with multiple members of the industry was extremely challenging. Each company had their own agenda and sought to optimize their position."[271] While it is true that the challenges were huge in the early days of opening the telephone system to competition, those challenges have never diminished. In fact, Anderson stated they continued to grow as new services and new entrants appeared. She described how the following cartoon was circulated within her organization in 2009 and generated smiles of acknowledgment as rather accurate by those employees, such as herself, who had been working the standards issues for many years.

[270] Joe McMonagle, Former Director of Planning and Operations at Southwestern Bell Corporation, interview conducted by the author, July 20, 2015.
[271] Phyllis Anderson, Member of Technical Staff, AT&T, Interview by author, February 24, 2017.

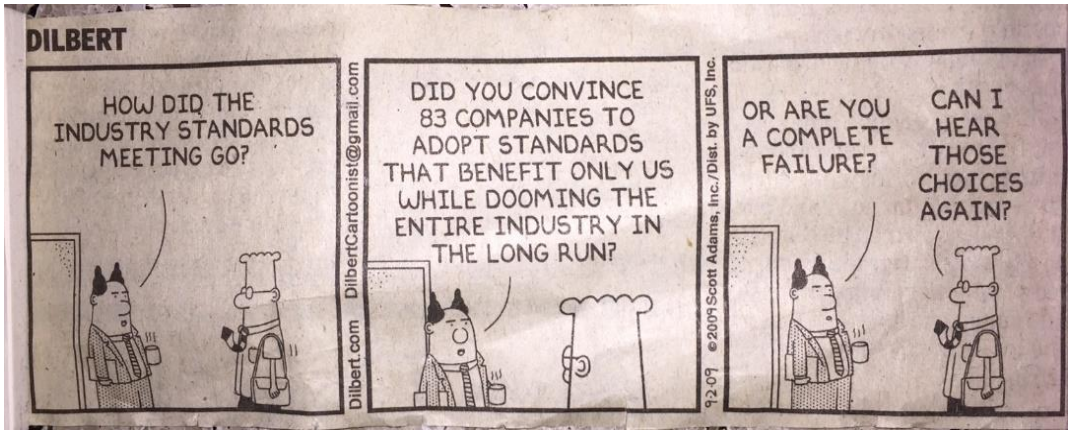

Figure 8 – Cartoon Illustration of the Standards Process

CHAPTER 7. CONCLUSIONS

"No monopoly of global telecommunications currently exists or is likely to exist because of the constant technical change produced by the free interchange of technical information, the relative fluidity now achieved by global capital, and the failure … to protect Bell's monopoly…."[272]

This quote is an accurate assessment of what happened by the late 1990s and remains true today. In response to facing growing competition in their own territories, the former Regional Bell Operating Companies (RBOCs) began to expand into competition with each other. They also began to consolidate through acquisition.[273] Even the remaining businesses of the original AT&T were eventually acquired by one the RBOCs.[274]

Part of the reason the AT&T breakup is a recurring area of interest in business history is that communications impacts society in so many ways. As the nature of communications has changed, the way most of us live and work has also changed. Many rural areas of the United States did not have a phone in the house until the 1960s. Today, we carry a smartphone almost all the time and would feel totally lost without it. Access to the wealth of information, entertainment, business applications and personal interaction provided by the internet has become so central to the lives of most citizens in the United States that we cannot imagine the world without it. Competition in this arena is a topic of great relevance given the February 26, 2015, FCC action, in which openness was defined

[272] Peter J. Hugill, *Global Communications Since 1844 – Geopolitics and Technology*, The Johns Hopkins University Press, Baltimore, 1999, p.239.
[273] The first such move was when the Southwestern RBOC acquired the RBOC serving the Great Lakes states (Ameritech).
[274] In October, 2005 the acquisition of AT&T by SBC Communications was finalized. That RBOC was formally Southwestern Bell. Primarily, AT&T's remaining businesses at the time were long distance voice and data, internet service, international operations, and the new service of mobile telephony. Because of the legacy of the name, the combined company took the name of AT&T.

not as price control, but as assurance that the last mile connection will not be used to block access. Although the FCC decision is about "network neutrality" and most scholars address transport issues, the implications for Customer Provided Equipment (CPE) and associated interconnection standards are very significant. Most of what has been written about the history of competition and regulation deals with network competition rather than premises equipment. Further, the importance of CPE standards in the whole process is understated. Potential harm to the performance of the telephone system was at the forefront of the arguments against CPE competition and led to the requirement for certification of CPE provided by other than the incumbent telephone company. Therefore, this dissertation addressed not only competition in voice or data transport of information, but also explored in depth the role competition in CPE played in the debates which ultimately led to divestiture.

7.1 Former RBOCs Have Minor Role in CPE Today

Provision of the essential data communications premises equipment became highly competitive and provided by a large number of companies. By the mid-1990s, the Bell Operating Companies (BOCs role in data CPE had become minimal. The major role that data equipment evolution, driven by technology, has played was paid significant attention in this dissertation. For voice CPE, there were certainly technological advances which played a role in the demise of the BOCs dominating position; however, in that case, regulatory factors were the prime driver. In the case of data CPE, the reverse appears to be true. Although governmental action obviously had its impacts, it was the rapid advance of technology and the merging of computers and communications which had the greater influence on the diminishing role of the BOCs in data CPE.

7.2 Intense Pressures of Fragmentation and Competition

In the case of telephone companies, as in other industries, there are motives for increased competition. The expectation of greater creativity and innovation is primary among the objectives. Other points particularly germane to telephone operations were well stated in a report funded and prepared specifically for AT&T. The report noted, "Competition is basically a cruel market process which rewards the efficient and metes out severe punishment to those who fail. Under a regime of full competition, each firm is under severe pressure to offer the product most likely to appeal to consumers."[275] Among the authors of this report was a man who made enormous impacts on regulation in the United States. That man was Alfred Kahn. This same report held out the prospect that certain types of services may be best provided by a regulated monopoly. While not stated in the report, services in rural areas may be such a category since universal service would dictate the need to connect remote and inherently expensive locations. It went on to discuss how there were cases where competition could thrive without negating the merits of economies of scale which a monopoly enabled. CPE is one such area. As stated, with some sadness, by a former employee of a BOC, "CPE is now a commodity and can be purchased anywhere, even Walmart."[276]

Adjusting to this new environment was an enormous challenge to the Bell System, which grew up and thrived as a regulated monopoly. An example of the impact was an

[275] William J. Baumol, Otto Eckstein, and Alfred E. Kahn, *Competition and Monopoly in Telecommunications* (n.p.), 1970, page 4. This report was prepared by an advisory group at the request of AT&T to define economic issues associated with the changing regulatory scene. It was for internal use of AT&T and was not published outside the company. A copy was located at the AT&T Archives and History Center in San Antonio, Texas.

[276] Joe McMonagle, Former Director of Planning and Operations at Southwestern Bell Corporation, interview conducted by the author, July 20, 2015.

operations planning book, jointly authored by AT&T General Departments and Bell Laboratories. It was under preparation prior to the January 1982 settlement of the AT&T antitrust case. After the settlement, the publication had to be entirely modified to fit the new world of telecommunications. The subject of the report was instructions regarding planning, building and operating the next generation of communications networks to accommodate the growing need for integration of voice and data over the same transmission, switching and terminal facilities. After five months of dissecting and remolding, it was issued in June 1982 as a recommendation to the restructured AT&T and the soon to be divested Bell Operating Companies.[277] Although some of it proved useful, for the most part, each newly independent company chose its own path.

The government's view ultimately prevailed because the BOCs and AT&T could provide no convincing evidence to counter unfolding events. Nor could they win on theory. Their attempts to buttress their position, through the ill-conceived Bell Bill and its accompanying scare tactics, were worse than ineffective. They prompted a significant backlash.

7.3 Accept and Go Forward

It would be counterfactual to speculate about what may have been different if deregulation had not proceeded as it did. What we do know is that our world today enjoys an abundance of information and communications capabilities. Beyond the relaxation of regulation and encouragement of competition, the federal government also took steps to press forward on development and implementation of advanced telecommunications

[277] Drews, Wayne, and Richard Olsen. *Integrated Special Services Plan*. Basking Ridge, New Jersey: Bell System, 1982.

technologies. Auctions of government-controlled radio spectrum for use in privately-managed cellular networks led to mobile telephones which have replaced much of the traditional landline phone service and enabled "anywhere/anytime" communications. In addition, impacts of the internet are perhaps even more profound. In the words of President-Elect Bill Clinton, the advanced communications infrastructure, ". . . could do for the productivity of individuals at their places of work and learning what the interstate highway of the 1950s did for the productivity of the nation's travel and distribution system."[278] In 1993 President Clinton authorized an investment of $2 Billion for the creation of a high-speed information and communications network, connecting universities, private and public research laboratories, hospitals, and eventually homes, which would serve as a catalyst for growth in information services. Congress later reduced the investment to $1 Billion.[279] The President's support and funding approved by Congress has served keep the United States in a strong technological position. The post-divestiture environment has successfully functioned toward achieving this goal. One measure of this is shown in the following table which identifies the position of the United States as having the third largest number of internet users. However, it is important to recognize that some countries with smaller populations, such as Japan, the United Kingdom and the Nordic countries, do have a higher percentage of the population with internet access than does the United States. There is still room for improvement by the United States in achieving universal accessibility to the internet.

[278] Bill Clinton, quoted in *The New York Times*, November 10, 1992.
[279] National Information Infrastructure, HR 1757. 103rd Congress, July 26, 1993.

Table 7 – Internet Users by Country in 2016[280]

		Number of Users	% of Population
1.	China	721, 434,547	52.2
2.	India	462,124,989	34.8
3.	U.S.	286,942,362	88.5

In 1995, the Progress and Freedom Foundation issued a report that advocated the elimination of the FCC, thus ending federal regulation of all telecommunications. Entry and pricing in all markets would be free of federal control.[281] The rationale was that new technologies, such as wireless voice and data, cable TV provided fast internet, computer based connectivity were creating a competitive marketplace where regulation would no longer be needed. The economics of the various alternatives were fully comparable to traditional wired telephony. Also, by shortly after divestiture, the penetration rates of wired telephony had already reached very high levels, even for the lower income families. This level of penetration meant traditional arguments for universal service no longer held.

[280] www.internetlivestats.com/internet-users-by-country, *International Telecommunication Union (ITU),* 2016.
[281] George A. Keyworth et al., *The Telecom Revolution: An American Opportunity* (Washington: Progress & Freedom Foundation, 1995) Available at: http://ssrn.com/abstract=2120176

Table 8 – Household Income and Telephone Penetration After Divestiture[282]

Household Income	% of homes with telephone
Under $5000	71.1
$5,000 – 7,499	82.7
$7,500 – 9,999	87.6
$10,000 – 12,499	89.5
$12,500 – 14,999	91.3
$15,000 – 17,499	92.9
$17,500 – 19,999	94.6
$20,000+	96.3

Although the proposal to end regulation had some merit, there was no chance it could be enacted by Congress and the executive administration in power at that time. Their philosophy was that government had an obligation to continue some degree of regulation in order to provide protection for every citizen from corporate greed. For example, the incumbents sunk costs might otherwise allow them to reduce rates substantially to forestall entry of competitors. Additionally, the incumbents could take actions to complicate interconnection and numbering methodologies. If a customer would have to change their phone number, then they may be less likely to leave the incumbent.[283]

[282] Data from U.S. Census Bureau, 1986.
[283] Robert W. Crandall, *Have Regulators Dialed the Wrong Number*? Westport, CT: Praeger, 1997.

Whether the breakup of AT&T was the best route for society to take can be endlessly debated. What is for certain is that through legal and political processes the pro-competitive philosophy, which Carter advanced, resulted in the largest divestiture in history and overwhelmed and outdated all other previous telecommunications regulation and competition initiatives.

More than twenty years have passed since what is likely the last major initiative in deregulation of the telecommunications industry. The 1996 Telecommunications Act changed parts of the AT&T Divestiture Agreement by allowing the BOCs unrestricted permission to enter in Long Distance services, added more detailed provisions for interconnection with competitors and allowed Cable TV and BOCs to enter each other's markets. However, it did not eliminate the ability of state commissions to impose their individual regulations.

While comparisons of telecommunications to other industries with monopolistic overtones, such as railroads, electric utilities, or airlines, are useful they are unclear and incomplete. Peter Temin, writing the official AT&T history, argued that a change in governmental ideology favoring competition was more influential than technological change or the specific legal issues.[284] It must also be noted that the power and influence of potential competitors were key to driving negotiations, governmental philosophies, regulatory changes and clearly the standards processes. "Spectrum auctions removed barriers to entry for wireless services and introduced more competition. Ultimately, the former Bell System became two national operating companies rather than one long distance

[284] Ibid, 343.

and seven regional companies. Long distance used to be a major industry, now it is just part of the service."[285]

7.4 Technology Made It Possible and Competition Has Worked

While various factors had their impacts; it is clear today that without the advancements in technology the ultimate change could not have happened. These winds of change began with competition in CPE at the BOC level and have led to the ability for mobile phones, provided by a competing multitude of services companies, to call a person rather than a place and to access the world of the internet. The storm of technology that precipitated the split of the country's largest company into pieces set the stage for a multitude of new entrants, which policy-makers facilitated and customers embraced. The result was to directly impact the lives of millions and touch almost all citizens in some way.

The conclusion is that the Bell System could be successfully broken apart. AT&T's arguments predicting severe damage to essential services were wrong. This is recognized in remarks by Irwin Dorros. At the time of the antitrust case, he was the AT&T Assistant Vice President-Network Planning. In that role, he was responsible for planning the evolution of the then Bell System nationwide network. During this assignment, he was the technical leader of AT&T's defense in the DOJ antitrust action. He participated in negotiations and framing of the settlement terms. During an interview in 2011, Dr. Dorros said, "I testified in court three times that it would be a disaster. It didn't turn out to be a

[285] Joe McMonagle, Former Director of Planning and Operations at Southwestern Bell Corporation, interview conducted by the author, July 20, 2015.

disaster at all. I didn't realize the power of competition at the time."[286] What most people inside the BOCs thought would be a disaster has worked out well.

[286] Irwin Dorros, quoted in Wall Street Journal, "Ma Bell, Rising From the Past" by Dennis Berman, March 21, 2011.

TIMELINE

1848 John Stuart Mill developed the principle of natural monopoly when he noted that gas and water service in London could be supplied at lower cost if the duplication of facilities by competitive firms were avoided.

1877 A United States Supreme Court decision enabled states to regulate prices levied by businesses affected with a public interest.

1878 First telephone exchange opens in Connecticut.

1894 Second Bell patent expires and opens the way for competitors.

1907 Theodore Vail, AT&T's first President, called for regulation of the telecommunications industry because it was a natural monopoly operated in the public interest.

1910 The Interstate Commerce Commission began regulation of the interstate aspects of the telephone industry.

1934 The Communications Act was passed by Congress and created a seven-member Federal Communications Commission charged to assume the interstate aspects of communications.

1947 First antitrust suit filed against AT&T.

1952 Federal court ruled that Dialite, a customer-owned device to attach to a telephone dial, was not permitted.

1956 FCC prohibited use of the Hush-a-Phone but the Federal Appeals Court overturned the ruling and use of the device was permitted.

1956 First antitrust suit was settled by a consent decree which limited Bell to only the telephone business.

1967 The FCC issued the Carterfone decision permitting other manufacturers' equipment to be connected to the network so long as it "did no harm."

1974 A second antitrust suit was filed against AT&T, seeking a break-up of the Bell Companies.

1976 The FCC and Appeals Court approve a registration program which includes PBXs, key telephone systems, main stations, data and ancillary equipment (i.e. fax machines).

1976 The Consumer Communications Reform Act, supported by the telephone companies, is introduced in Congress.

1977 President Jimmy Carter appoints Alfred Kahn to work on fighting high inflation. They advance deregulation and price competition which support breaking up of market control by large regulated monopolies.

1977 The Senate holds oversight hearings which include witnesses from telephone companies, the FCC, competitive suppliers, business customers and consumer advocacy groups.

1979 The Telecommunications Act of 1979 is introduced in Congress to replace the Communications Act of 1934 as the vehicle for managing national telecommunications policy.

1980 The FCC rules that AT&T must offer terminal equipment only through an unregulated separate subsidiary. The transition must be completed by March 1982.

1981 Trial proceedings begin in the Justice Department's 1974 antitrust suit against AT&T.

1982 Settlement announced of the 1974 antitrust suit against AT&T, resulting in the divestiture of the Bell Operating Companies.

1984 Divestiture becomes effective.

1996 The United States Congress passed a Telecommunications Act which replaced the 1934 act and opened competition in most aspects of the telephone business.

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